4.3 Configuration Management

This section describes the configuration management tools used by DAAC operators:

1. ClearCase
2. CDDTS
3. ClearCase BLM
4. Remedy (Inventory, Logistics and Maintenance {ILM}Manager)
5. FLEXlm
6. TestTrack Pro

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4.3.1 ClearCase

This section presents an orientation of ClearCase. ClearCase terminology such as VOB (Versioned Object Base, public storage area for files) and views (operator private storage), etc., is used throughout this section. Refer to the *ClearCase User's Manual* for both a more detailed description of ClearCase and an explanation of the terminology used. Refer to the *ClearCase User's, Administrative, and Reference Manuals* for detailed explanations of ClearCase functionality.

ClearCase is a COTS product used on EMD to perform the Software Change Manager functions. It provides the staffs at the SMC and the DAAC sites the capability to organize and store software in a software library, to control software changes and versions, and to assemble sets of software for release purposes. Specifically, ClearCase is used at Landover to regulate access to custom code files; to control and log file changes; to perform builds of software and keep a record of the build's content (files, compiler, and other resources used).

For EMD Evolution, the ClearCase view servers and VOB servers have been moved from Solaris 8 hosts to Linux hosts. A noted benefit of the porting of ClearCase has been speed. ClearCase functions now execute between 40-80 times faster, due to the host network interface improvements (x10) and the much faster processors. This primarily covers compilations and file preparations.

ClearCase is used to perform a variety of operator functions. The most frequently used functions are listed in Table 4.3.1-1.

Table 4.3.1-1. Common Operator Functions Performed with ClearCase
(1 of 2)

Operating Function	Command/Script or GUI	Description	When and Why to Use
Establish a View	Setview /GUI (View Menu, Set Option) selection	The command or the GUI selection activates a view and allows user access to controlled files.	(1) Used to activate a reproducible workspace for a developer for working with specific file versions and directories for a task (2) Used to assemble sets of software for release purposes
Checkout Software	Checkout/GUI (Checkout) selection	The command or the GUI creates a view private, modifiable copy of a file version.	Used when a developer/maintainer needs to modify an existing version of software.
Checkin Software	Checkin/GUI (Checkin) selection	The command or the GUI selection creates a permanent new version of a file.	Used when a developer/maintainer needs to return a modified file version to the ClearCase software library.

Table 4.3.1-1. Common Operator Functions Performed with ClearCase (2 of 2)

Operating Function	Command/Script or GUI	Description	When and Why to Use
Perform software builds	Clearmake/GUI (Building menu)	(1) ClearCase build utility that automates the process of software builds (2) Facilitates derived object sharing (3) Creates a record of the build so that it can be repeated	Used when it's time to build, integrate and/or test developed/revised software.
Display the mount-point and storage directory of all VOBs on the system	Cleartool lsvob/GUI (Admin menu)	ClearCase utility that determines and displays default/specified information about all of the VOBs that have been established.	(1) Used to list one or more VOBs (2) Used to determine which VOBs are mounted (3) Used to determine which VOBs are private or public (refer to *ClearCase Reference Manual* for details)

4.3.1.1 Quick Start Using ClearCase

To invoke the ClearCase graphical user interface GUI from the command line prompt type:

/usr/atria/bin/xclearcase.

4.3.1.2 ClearCase Graphical User Interface

ClearCase has a Command Line Interface (CLI) and a GUI. The GUI enables execution of all the common functions and facilitates graphical examination of the version history of objects in VOBs. When ClearCase is invoked, a Transcript screen as shown in Figure 4.3.1-1 appears. The Transcript screen displays status of functions executed and displays warning and error messages. It automatically appears when the status of an activity needs to be displayed.
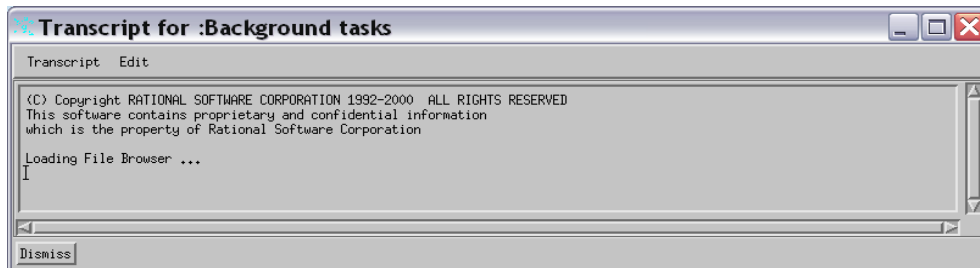

Figure 4.3.1-1. ClearCase Transcript Screen

4.3.1.2.1 Establish View

Operator access to versions of files in a VOB is facilitated by a view. When ClearCase is initiated, the operator is asked to select a view. Available views are displayed in the View Tag Browser Screen as shown in Figure 4.3.1-2. Select a view by highlighting the desired view and clicking the "Ok" button at the bottom of the screen.
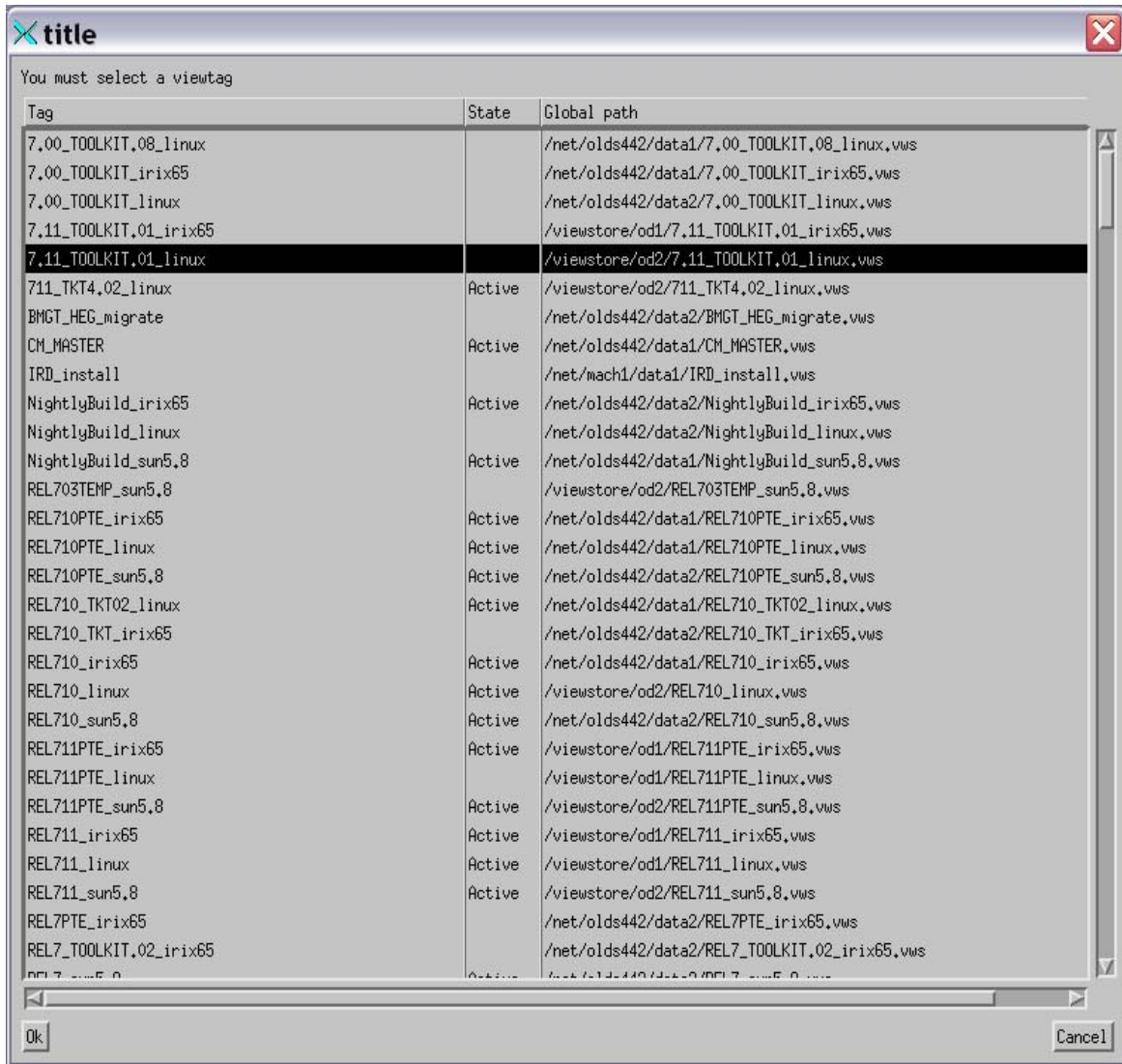

Figure 4.3.1-2. View Tag Browser Screen

After a View is selected the ClearCase File Browser screen, the main GUI screen, appears as shown in Figure 4.3.1-3. The File Browser screen displays the current directory name just below the toolbar and displays the contents of the directory in the space below the directory's name. A

variety of GUI-oriented functions can be initiated from this screen. Explanations of the menu bar and the toolbar items are provided in Chapter 3 of the ClearCase User's Manual.
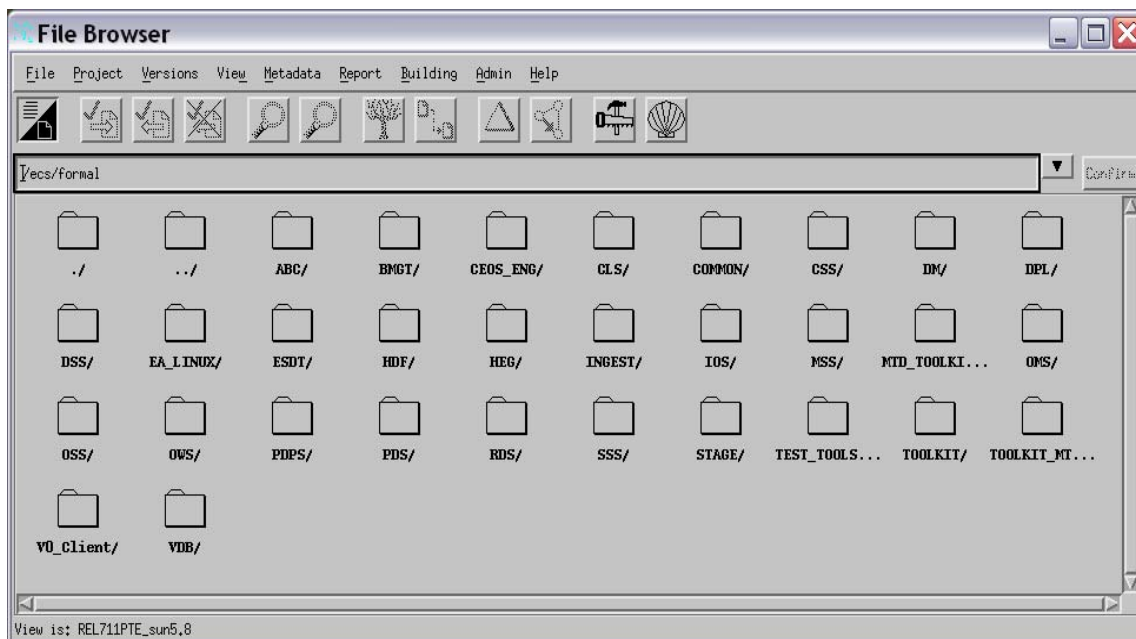

Figure 4.3.1-3. ClearCase File Browser Screen (Main Screen)

4.3.1.2.2 Checkout Software

Software file versions in a ClearCase VOB are in a read-only state. An operator must check a file version out of the VOB before any editing of the file version can be accomplished. Check out a file version by selecting the file and clicking the checkout icon [icon] on the toolbar. An alternate method is to select the file, click the Versions menu, then the Checkout option, then one of the "Reserved or Unreserved" options shown in Figure 4.3.1-4.
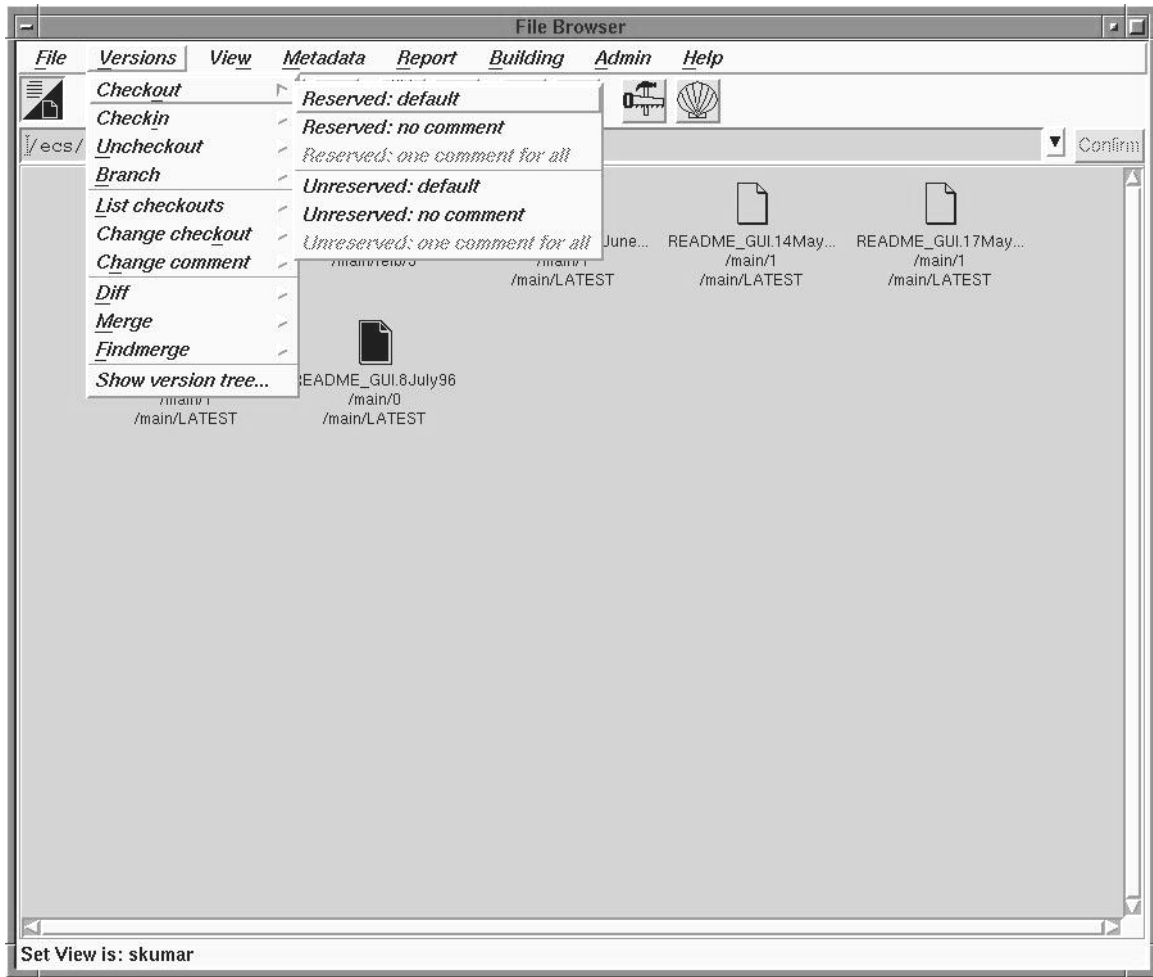
Figure 4.3.1-4. ClearCase File Browser Screen (Checkout Software)

If the operator is authorized and the view is set up to checkout files, then the checkout process continues and the ClearCase Prompt screen appears as shown in Figure 4.3.1-5. This screen gives the operator the opportunity to enter an explanation of why the file version is being checked out.
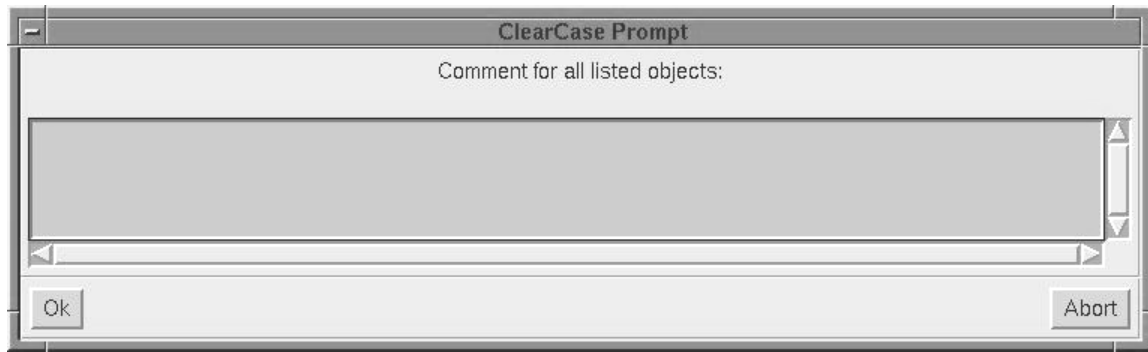
Figure 4.3.1-5. ClearCase Prompt Screen (Checkout Comment)

After appropriate comments are entered, click the "Ok" button and ClearCase adds the comments to the historical record for the file version. The File Browser screen reappears as shown in Figure 4.3.1-6 and it shows that the file version has been checked out. Note, the check mark for file, README_GUI.8.July96 (more updated version available?), has been added. Addition of the check mark is an indication of a successful checkout.

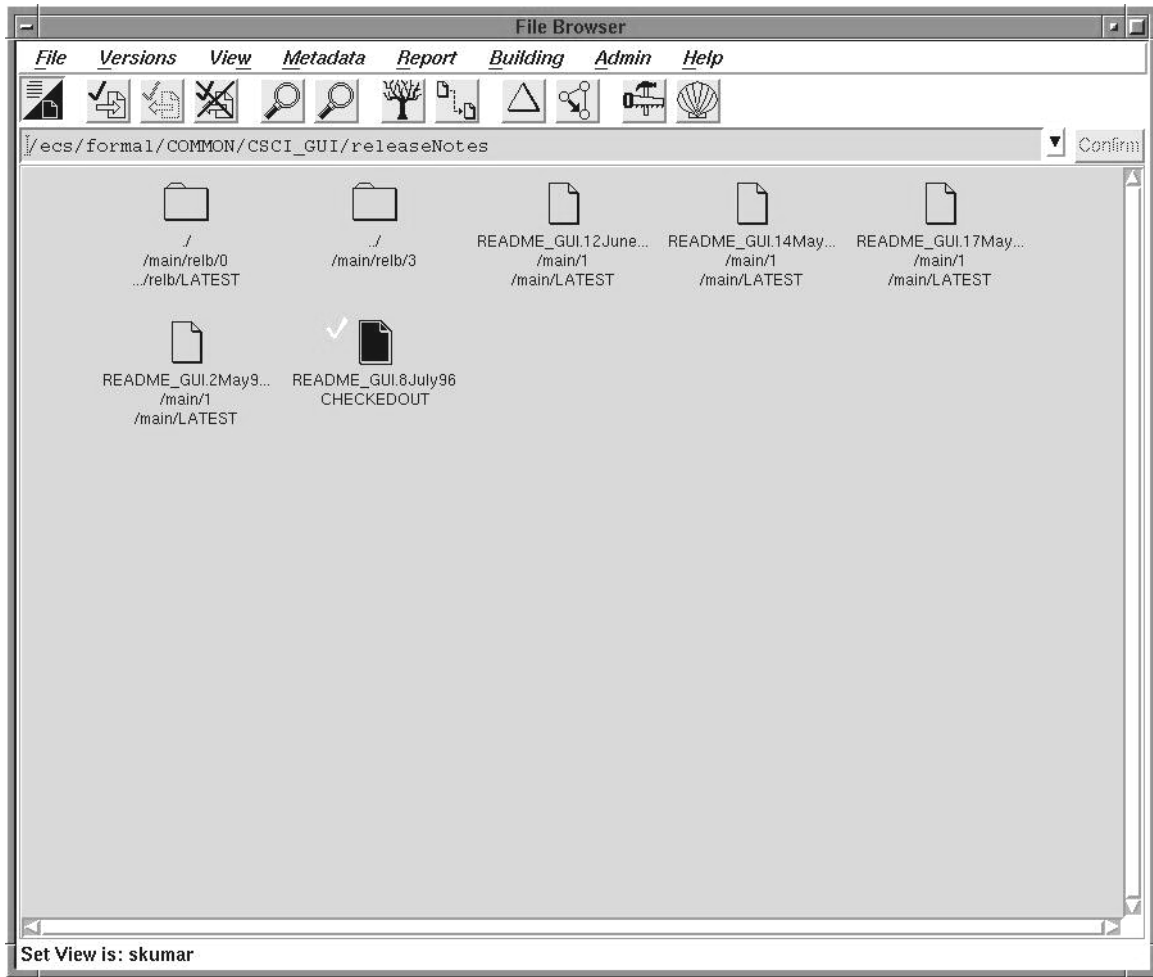**Figure 4.3.1-6. File Browser Screen (File Version Checked-Out)**

To verify that the file version has been checked out on a branch, click the Vtree icon on the File Browser toolbar. This activates the Version Tree Browser and it displays a graphical image of the branching as shown in Figure 4.3.1-7. Note, the checked out file version has been placed on the main branch (/main) in the example below.
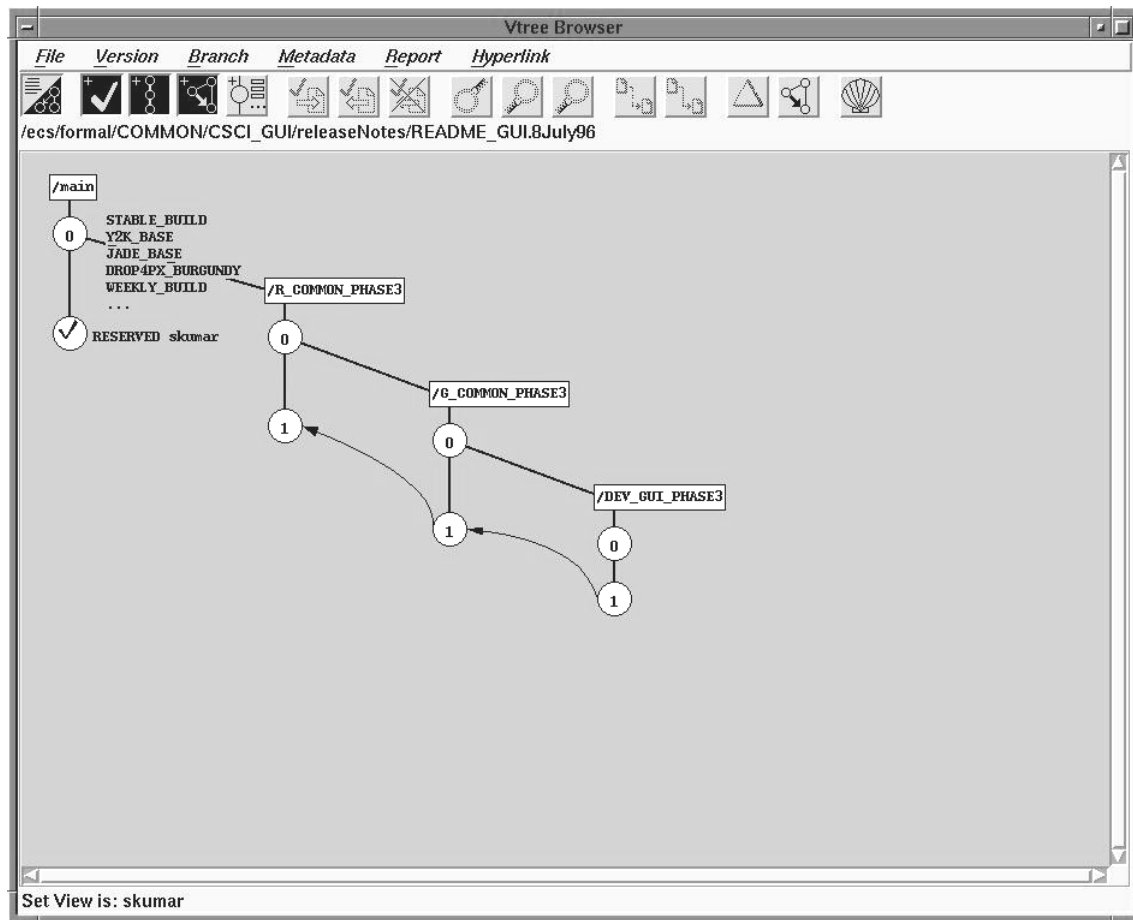
Figure 4.3.1-7. ClearCase Version Tree Screen

4.3.1.2.3 Checkin Software

A software file version checked out of the ClearCase library for editing must be checked in to the library for it to become a new version of the original file. Click the checkin icon [icon] on the File Browser toolbar to initiate the check-in process. A ClearCase Prompt box appears as shown in Figure 4.3.1-8 to facilitate the adding of comments at check in to the file version's record. Enter a comment and click the "Ok" button to continue or just click the "Ok" button to continue the check-in process.
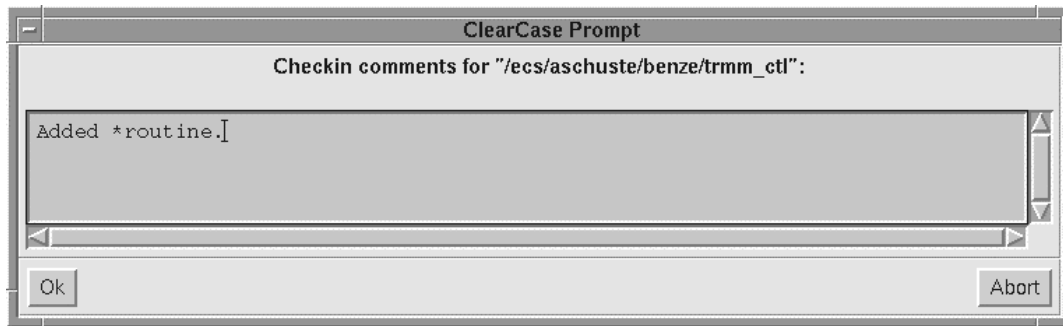
Figure 4.3.1-8. ClearCase Prompt Screen (Checkin Comment)

The File Browser screen reappears as shown in Figure 4.3.1-9 and it shows that the file version has been checked in. Note, the check mark for file, README_GUI.8July96 (more updated version available), has been removed. Removal of the check mark is an indication of a successful checkin.
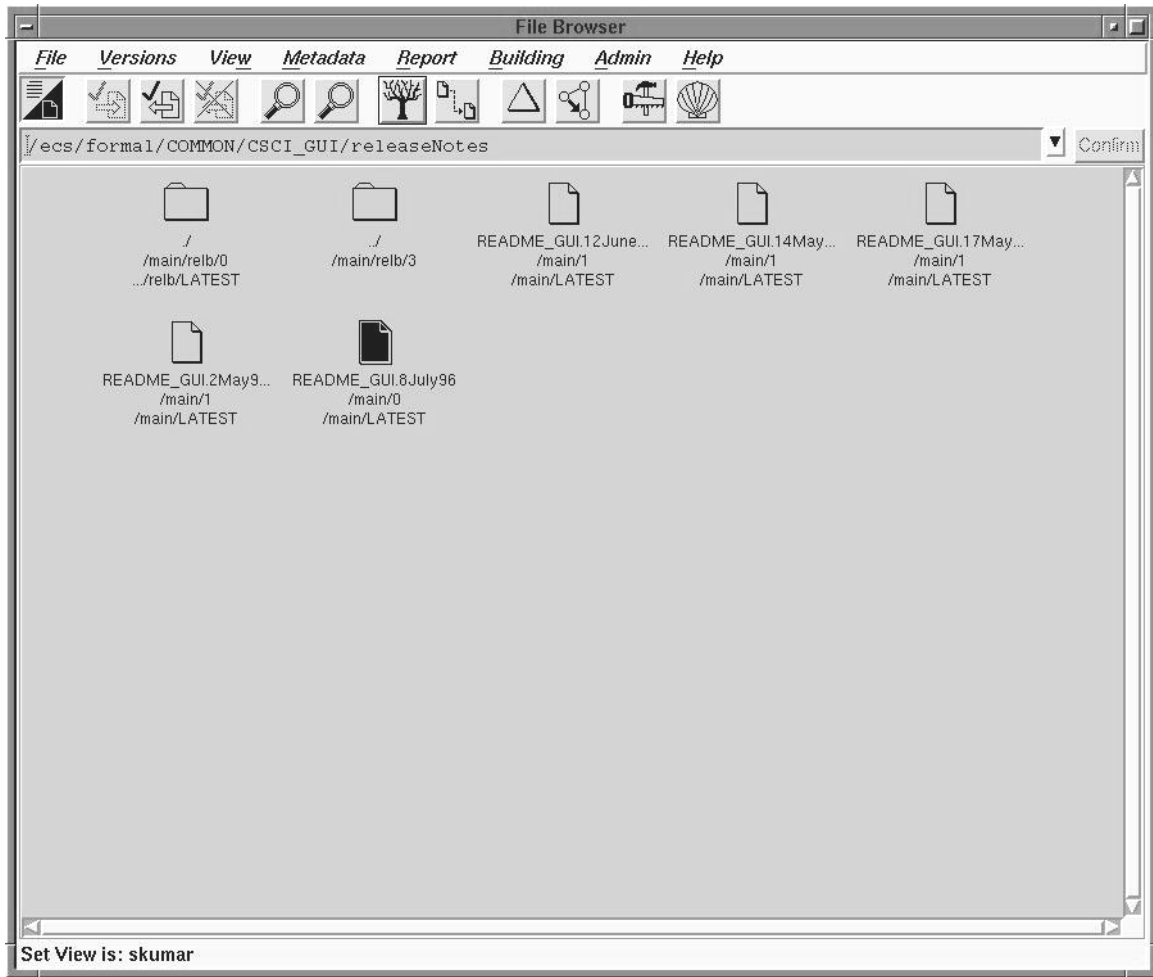
Figure 4.3.1-9. ClearCase File Browser Screen (File Checked-In)

4.3.1.2.4   Perform Build

The Building menu on the File Browser as shown in Figure 4.3.1-10 is used to produce derived objects. The Building menu is the GUI version of the command line interface build utility called clearmake. Reference the *ClearCase User's Manual* and the clearmake section of the *ClearCase Reference Manual* for information on the use of this capability.
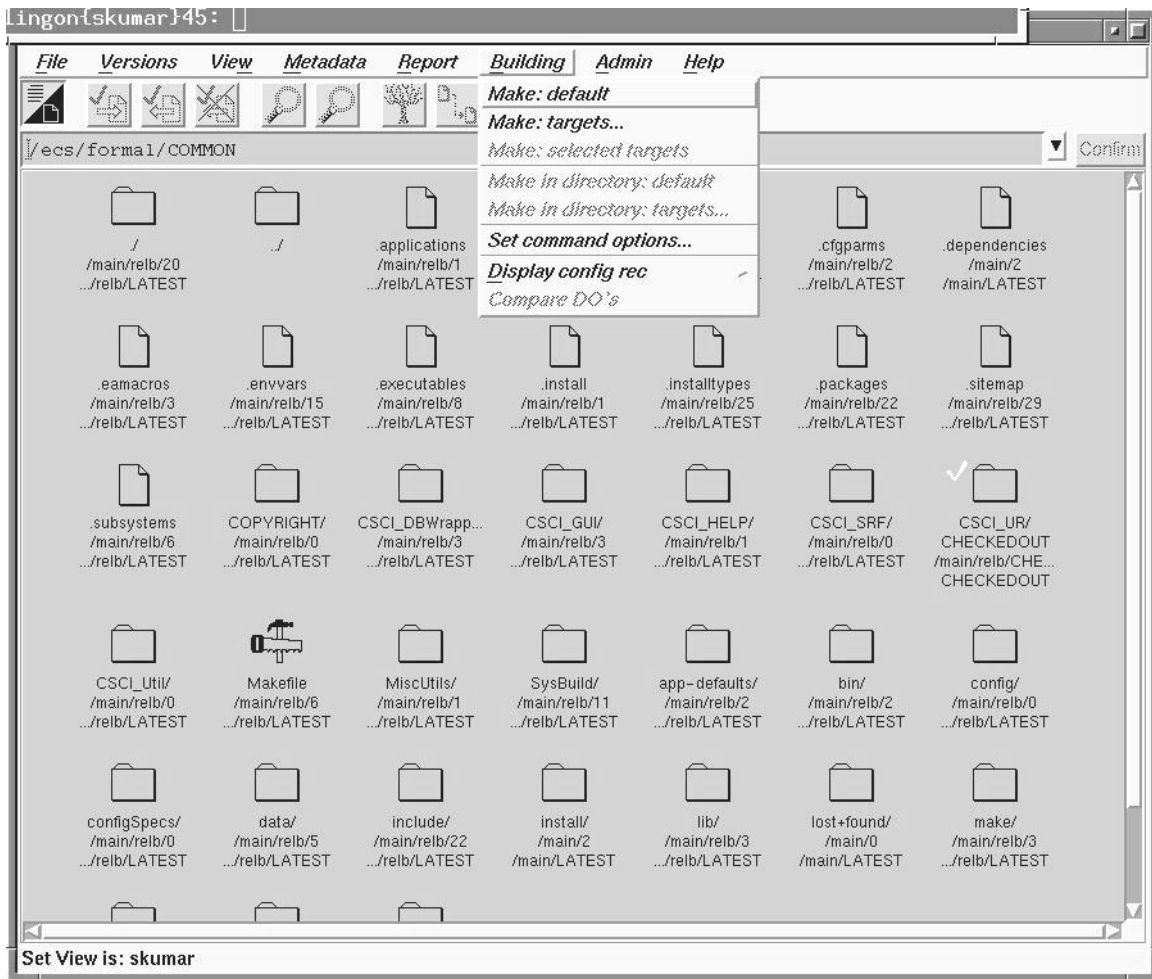
Figure 4.3.1-10. File Browser Screen (Build Menu)

4.3.1.3 Required Operating Environment

For all COTS packages, appropriate information on operating system environments, tunable parameters, environment variables, and a list of vendor documentation can be found in a CM controlled ReadMe file for each product. To find the ReadMe file for ClearCase, use the ClearCase Baseline Manager tool (ClearCase BLM) to determine where in ClearCase the ReadMe file resides. The installation path of this COTS software product may be obtained from the EMD Baseline Information System (EBIS) 910-TDA-030 Where-Used Technical Report.

4.3.1.4 Databases

ClearCase data is stored in VOBs and views. Reference the *ClearCase Administrator's Manual* for a detailed description of the ClearCase databases.

4.3.1.5 Special Constraints

None

4.3.1.6 Outputs

Reference the *ClearCase User's Manual* for a description of the ClearCase outputs.

4.3.1.7 Event and Error Messages

ClearCase creates an event record for most of the processing activities that modify the VOB and stores it in the VOB database. These records are linked to the derived objects. These records provide a chronological event history for the objects. Reference the *ClearCase Reference Manual* for detailed information about logging of ClearCase events. The reference manual describes the contents of an event record, VOB objects that have event histories, and ClearCase operations that cause event records to be written.

ClearCase error messages indicate that a problem has occurred. Some errors are user correctable and others require correction by the operations staff. In both cases, ClearCase records error and status information in its log files. Reference the *ClearCase Reference Manual* for a description of the error logs, the ClearCase programs that use them, the error logs location, and their format.

4.3.1.8 Reports

None.

4.3.2 Clear Distributed Defect Tracking System (CDDTS)

The Clear Distributed Defect Tracking System (CDDTS), is the COTS product serving as the ECS Change Request Manager (CRM). CDDTS provides the functionality necessary to compose, submit, report, and track status of proposals to change the ECS baseline. It provides the capability to register Configuration Change Requests (CCR) electronically. A CCR is a document that requests, justifies a need for, and defines a change to a Configuration Item (CI). A CI is an aggregation of hardware, firmware, software, or any of its discrete portions, which satisfies an end use function and is designated for configuration control.

CDDTS prompts for relevant information, assigns an identifier, and mails notification of the newly submitted requests to designated personnel. As the CCRs advance through approval and implementation processes, CDDTS maintains status, disposition, resolution, and closure information as entered by the M&O staff. It sends notification to designated personnel when the status of the CCR record changes and makes data available for viewing by designated staff members. CDDTS also keeps track of Non-Conformance Reports (NCRs) for M&O Sustaining Engineers. CDDTS is used to perform the operator functions listed in Table 4.3.2-1.

Refer to the *ClearDDTS User's Manual* for additional information about CDDTS. For information on the use of *ClearDDTS* in the ECS operational environment, see the Configuration Management Procedures section of the Mission Operations Procedures document (611).

Table 4.3.2-1. Common ECS Operator Functions Performed with CDDTS (1 of 2)

Operating Function	GUI	Description	When and Why to Use
Viewing CCR	CDDTS Main Screen	Operator views the contents of the selected CCR by highlighting the CCR in the CCR Index.	To quickly view the contents of CCRs in the Index.
Submit CCR	CDDTS Main Screen	• Operator initiates CCR record submission process by clicking the "Submit" button. • An initial set of data fields appears for entry of data.	Whenever there is a new CCR to be entered.
Change the Status (state) of the CCR	CDDTS Main Screen	• Operator changes the status of a CCR as it moves through its lifecycle states by clicking Change_State" menu and selecting the state desired. • Each state transition causes a new set of data fields to appear for entry of data.	Whenever the activities of a particular state have been completed and it is time to move to the next state.

Table 4.3.2-1. Common ECS Operator Functions Performed with CDDTS (2 of 2)

Operating Function	GUI	Description	When and Why to Use
Modify CCR	CDDTS Main Screen	Operator updates a previously entered CCR by clicking the "Modify" menu and selecting the "modify record" option.	To change previously entered data and/or to enter data into fields previously left blank.
Print CCR	CDDTS Main Screen	Operator sends a copy of CCR(s) to a monitor screen, printer, or to a designated file by clicking the "Print" button and selecting print options.	To obtain a hard or soft copy of a CCR or all of the CCRs in the CCR index.

4.3.2.1 Quick Start Using CDDTS

To invoke CDDTS from the command line prompt, enter:

/usr/ecs/OPS/COTS/ddts/bin/xddts

Additional information can be found in the *ClearDDTSUser's Manual*.

4.3.2.2 CDDTS Main Screen

Figure 4.3.2-1 is the CDDTS main screen. It consists of three major areas: the CCR Index Display, which shows an index of CCRs; the CCR Record page, which displays some of the content of the highlighted CCR in the Index; and the Enclosure Display, which shows the initial set of enclosures for a CCR. All CDDTS functions are initiated from this screen.

Figure 4.3.2-1. CDDTS Main Screen

Reference the *ClearDDTS User's Manual* for information concerning the menus and buttons on the CDDTS Main Screen.

4.3.2.2.1 CDDTS Submit CCR

Clicking the Submit button on the main screen brings up the "Submit A New Change Request" screen as shown in Figure 4.3.2-2. This screen enables the operator to select a class of projects (the Change Request Class is the default class) and a specific project (group of CCRs within the selected class) to which he/she wants to add a CCR. Reference Chapter 2 of the Clear*DDTS User's Manual* for a detailed explanation of the terms, class and project. The procedures described herein are applicable to any class and project.

Figure 4.3.2-2. Initial Submit Record Screen

The initial Submit Record Screen has two areas: CCR selection criteria area (middle section of the screen) and a help information area (last line of the screen). Information entered into the selection criteria area determines what set of CCR fields is selected for data entry purposes. The help information area explains how to get an explanation for each of the fields shown, how to move within a screen, and how to terminate the submit process.

Once the operator enters the desired class and project, the CCR page displays the CCR record form as shown in Figure 4.3.2-3. This form enables the operator to enter detailed information concerning the proposed change request.

```
┌──────────────────────────────── Record ─────────────────────────────────┐
│ ─                                                                        │
│ Modify   Change_State   Links   CM                              Help     │
│ ─────────────────────────────────────────────────────────────────────── │
│                          EDFMD_CHNG_REQ                                  │
│                                                        Page 1/3          │
│   CCR Number:  EDFmd00079       Submitted  : 991007     Revision: █      │
│   Priority[*]:                  Change Class[*]:                         │
│   Status    :  Submitting       Enclosures  : 0                         │
│                                                                          │
│   Title:                                                                 │
│                                                                          │
│                                                                          │
│   CCR ORIGINATOR INFORMATION                                            │
│      Originator Name:                                                   │
│      Organization   :                                                   │
│      Phone Number   :                                                   │
│      Organization Evaluation Engineer:                                 │
│                                                                          │
│   CONFIGURATION MANAGEMENT ADMINISTRATOR                               │
│      CM Admin. Name: bfloyd                                            │
│      Organization[*]:                                                  │
│      Phone Number  :                                                   │
│                                                                          │
│                                                                          │
│   `?´ for context sensitive help,   `esc´ to back up,   `control-C´ to abort │
└──────────────────────────────────────────────────────────────────────────┘
```

Figure 4.3.2-3. Submit Record Data Fields Screen

Descriptions of the Submit Record fields are listed in Table 4.3.2-2.

Table 4.3.2-2. Submit Record Fields Descriptions (1 of 2)

Field Name	Data Type	Size	Entry	Description
CCR Number	Character	10	System generated	A unique identifier for this resource change request.
Submitted	Date	6	System generated	The date this proposed change was first registered.
Revision	Character	2	Optional	The current revision/amendment to the proposed change.
Priority	Character	9	Required	• The urgency with which a proposed change is needed • Answer must be one of the following: routine, urgent, emergency • The default is routine

Table 4.3.2-2. Submit Record Fields Descriptions (2 of 2)

Field Name	Data Type	Size	Entry	Description
Change Class	Character	2	Required	• Classification that distinguishes change requests according to management level needed for approval • Answer must be I or II* • The default is II*
Status	Character	17	System generated	The stage this proposed change has reached in its lifecycle.
Title	Character	72	Required	The nomenclature used to identify the proposed change.
Originator Name	Character	25	Required	Name of the person who is the author of the proposed change.
Organization	Character	30	Required	Name of the originator's organization.
Phone Number	Character	13	Required	Phone number of the originator.
Organization Evaluation Engineer	Character	25	Required	Name of the person who initially determines whether or not the proposal has merit and should be entered into the CDDTS database.
CM Admin. Name	Character	8	System generated	• Name of the individual who registered this proposed change/enters the proposed change into the CDDTS database • Note: CDDTS uses User's Login ID
Organization	Character	5	Required	• Name of the CM administrator's organization • Answer must be one of the following: EDC, EOC, GSFC, LaRC, NSIDC or SMC
Phone Number	Character	13	Optional	Phone number of CM Administrator.

***Class I Change**: an out-of-contract scope change that affects the form, fit, or function of the ESDIS Project CCB controlled items (technical baselines, technical requirements, contractual provisions such as cost and schedule, etc.). The ESDIS Project CCB must approve a Class I change.

***Class II Change**: an in-scope contract change that does not fall within the definition of a Class I change (e.g., a change in documentation only, a change in software code to comply with design and performance requirements prior to product delivery, a change in hardware materials). Any appropriate level Configuration Control Board (CCB) can disposition a Class II change with the exception of Class II CCRs against documents controlled and maintained by ESDIS.

After all of the CCR record fields have been traversed, a Proposed Change Enclosure Screen is displayed (see Figure 4.3.2-4). This enclosure is used to hold additional information about a proposed change. It enables the operator to enter a free text description of the perceived need or problem and a proposed solution. For more information on the enclosure screen see Chapter 6 (Enclosures Section) of the *ClearDDTS User's Manual.*
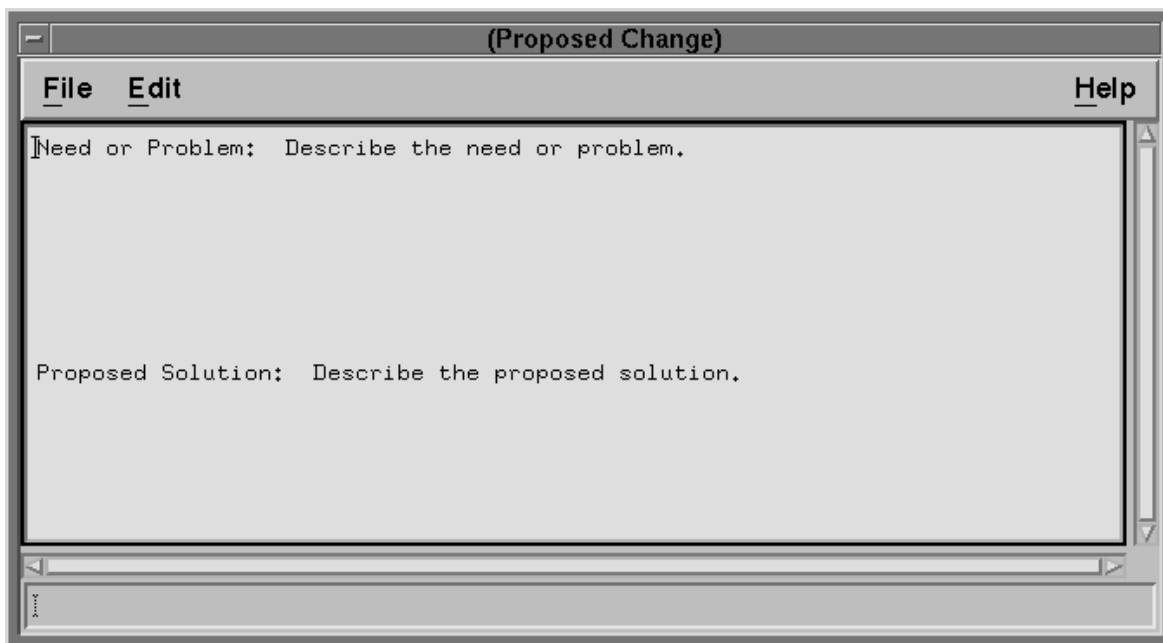
Figure 4.3.2-4. Proposed Change Enclosure Screen

Upon completion of entering the proposal information, clicking the file menu on the enclosure screen and selecting its "Save Changes & Dismiss Editor" option saves the contents of the enclosure. When the main screen display reappears, clicking the "Commit" button stores the CCR record into the CDDTS database.

4.3.2.2.2 CDDTS Change State of CCR

The first status (state) assigned to a CCR after it is committed to the CDDTS database is "New". Refer to the upper left corner of the center section of Figure 4.3.2-5 for the current status of the CCR. When it is time to move the CCR to its next lifecycle state, the Change_State Menu on the main screen (Figure 4.3.2-6) is used. Clicking on the Change_State Menu causes the available state options for the CCR record to appear as shown in Figure 4.3.2-6.

Figure 4.3.2-5. Main Screen (Change_State)

Figure 4.3.2-6. Change_State Menu Screen

The Change_State Menu allows the operator to select the next state to be assigned. After the state Assign-Eval (state entered when the change request is being assigned to an engineer for evaluation/analysis), is selected, the associated data fields (if there are any) for this new state appear as shown in Figure 4.3.2-7.

```
┌─────────────────────────────────────────────────────────────────────┐
│  ─                            Record                                  │
├─────────────────────────────────────────────────────────────────────┤
│  Modify    Change_State    Links    CM                        Help    │
│─────────────────────────────────────────────────────────────────────│
│                          EDFMD_CHNG_REQ                               │
│                                                        Page 2/3       │
│  CCR Number:  EDFmd00080                                              │
│                                                                       │
│  ANALYSIS INFORMATION                                                 │
│     Evaluation Engineer : bfloyd                                      │
│             Organization[*]: LaRC                                     │
│             Email Address: bfloyd@larc.ecs.nasa.gov                   │
│                                                                       │
│     Impact Evaluators[*]:                                             │
│             1. LaRC    2. GSFC    3. EDF    4.         5.        6.    │
│             7.         8.         9.        10.        11.       12.   │
│                                                                       │
│     Sites Affected[*]:                                                │
│             1. LaRC    2. GSFC    3.        4.         5.        6.    │
│             7.         8.         9.                                  │
│                                                                       │
│     Related CCR# :                                                    │
│     CI Affected  : Planning CSCI                                      │
│     Documents Affected:                                               │
│     Release Affected  : Release X                                     │
│     Baselines Affected: █                                             │
│                                                                       │
│  `?´ for context sensitive help,   `esc´ to back up,   `control-C´ to abort │
└─────────────────────────────────────────────────────────────────────┘
```
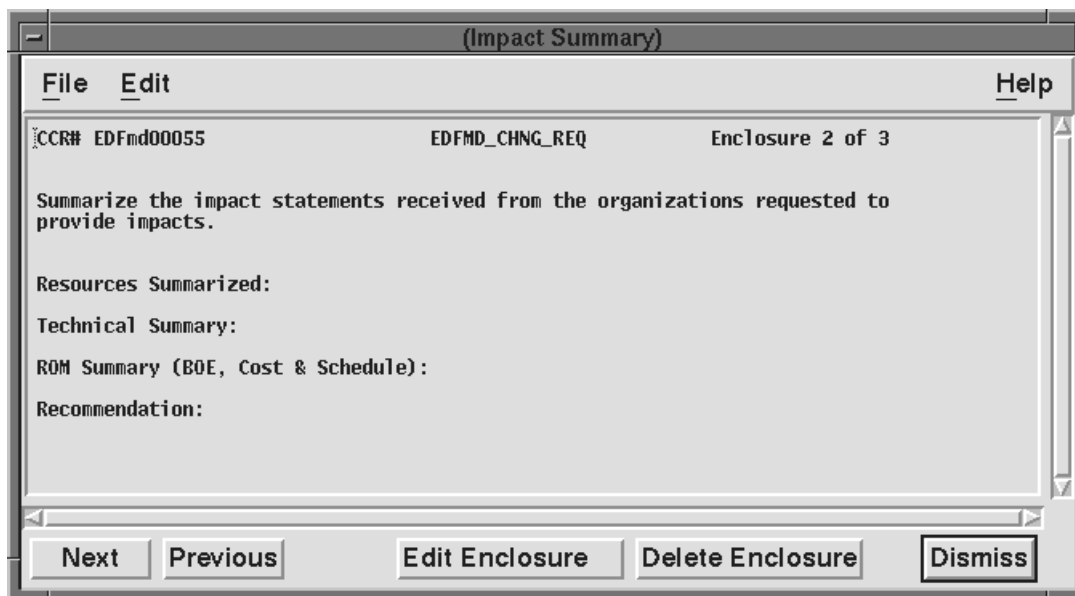
Figure 4.3.2-7. New State (Assign/Eval) Fields Screen

The new state's CCR form allows the operator to enter data into the newly displayed fields. Descriptions of the Assign-Eval fields are listed in Table 4.3.2-3.

Table 4.3.2-3. Assign-Eval Fields Descriptions

Field Name	Data Type	Size	Entry	Description
Evaluation Engineer	Character	8	Required	• Name of the responsible engineer designated to analyze the proposed system change • Use Login user name of the engineer
Organization	Character	5	Required	• Name of the evaluation engineer's organization • Answer must be one of the following: SEO, GSFC, LaRC, EDC, NSIDC, SMC or EOS
Eval. Engr. Email Address	Character	35	Optional	Electronic mail address of the evaluation engineer
Impact Evaluators (evaluators 1-12)	Character	5	Optional	• Collection of names of organizations designated to assess the impact of this proposed change • Answer(s) must be from the following: SEO, ESDIS, GSFC, LaRC, EDC, NSIDC, SMC, EOC or EDF
Sites Affected (sites 1-9)	Character	5	Optional	• The collection of names of ECS sites affected by this proposed change • Answer(s) must be from the following: SMC, GSFC, LaRC, EDC, NSIDC or EOC
Related CCR#	Character	10	Optional	The number of another CCR that is related to/associated with this CCR
CI Affected	Character	15	Optional	The identifier of the principal configuration item affected by this proposed system change
Docs. Affected	Character	56	Optional	The document identifiers of the system documents affected by the proposed system change
Release Affected	Character	10	Optional	The ECS release in which the proposed change is targeted for implementation
Baselines Affected	Character	56	Optional	The identifiers of system baselines affected by the proposed change

After all of the Assign-Eval fields have been traversed, an Impact Summary Enclosure Screen (See Figure 4.3.2-8) is displayed. This enclosure is used to hold free text information concerning the impact of the proposed change. The enclosure screen allows the operator to enter additional details in the same manner as described previously. After the enclosure has been saved, clicking the "Commit" button adds the new state's data to the database. The selected state, "Assigned-Eval", is now shown as the current state (Status) of the CCR record.

Figure 4.3.2-8. Impact Summary Enclosure Screen

The next state in sequence on the Change_State Menu is the Assign-Implement state. The Assign-Implement state (state entered when the change request is being assigned to an engineer for development) data fields are shown in Figure 4.3.2-9.

```
┌──────────────────────────────────────────────────────────────────┐
│ ─                           Record                                 │
├──────────────────────────────────────────────────────────────────┤
│ Modify   Change_State   Links   CM                          Help   │
│ ───────  ──────────     ─────   ──                          ────   │
│                         EDFMD_CHNG_REQ                             │
│                                                      Page 3/3      │
│  CCR Number:  EDFmd00080                                           │
│                                                                    │
│  DISPOSITION [*]: Approved                                         │
│    CCB Approving/Disapproving Official: Carol Mosley               │
│    Date: 991005                                                    │
│    CCB Organization[*]: ESDIS                                      │
│                                                                    │
│  IMPLEMENTATION                                                    │
│    Organization[*]: LaRC                                          │
│    Engineer: ksmall                                                │
│    E-mail: ksmall@larc.ecs.nasa.gov                               │
│    Start Date: 991007                                              │
│    Est. Time to Complete: 2 days                                   │
│    Completion Date:                                                │
│    Effective Date: █                                              │
│                                                                    │
│                                                                    │
│                                                                    │
│                                                                    │
│  `?´ for context sensitive help,   `esc´ to back up,   `control-C´ to abort │
└──────────────────────────────────────────────────────────────────┘
```

Figure 4.3.2-9. Assign-Implement State Screen

Descriptions of the Assign-Implement state fields are shown in Table 4.3.2-4.

Table 4.3.2-4. Assign-Implement Fields Descriptions

Field Name	Data Type	Size	Entry	Description
Disposition	Character	14	Required	• Final decision made by a designated approval official concerning this proposed change • Answer must be one of the following: Approved, Approved_w/cmt, Disapproved, Withdrawn, Deferred
CCB Approval Official	Character	25	Required	Name of the individual whose decision is reflected in the proposed change's disposition
CCB Approval Date	Date	6	Required	• Date the final decision was made concerning this proposed change • Required format is yymmdd
CCB Org.	Character	5	Required	• Name of the organization whose configuration control board has authority to approve the change request • Answer must be one of the following: ESDIS, SMC, GSFC, LaRC, EDC, or NSIDC
Implementation Organization	Character	5	Required	• Name of the organization assigned to implement this proposed change • Answer must be one of the following: SEO, GSFC, LaRC, EDC or NSIDC
Implement. Engineer	Character	8	Required	• Name of the responsible engineer designated to implement the proposed system change • Use Login user name of engineer
E-mail Address	Character	35	Optional	Electronic mail address of the implementing engineer
Start Date	Date	6	Required	• Date implementation activity is to begin • Required format is yymmdd
Estimated Time to Complete	Character	20	Optional	Estimated time it takes to develop and unit test proposed change(s) in days or months
Completion Date	Date	6	Optional	• Date the proposed change was completed • Required format is yymmdd
Effective Date	Date	6	Optional	• Date the proposed change is to go into operation • Required format is yymmdd

After the Assign-Implement fields have been traversed, the Resolution Enclosure Screen (See Figure 4.3.2-10) is displayed. This enclosure is used to hold a free text description of the solution for the proposed change request.
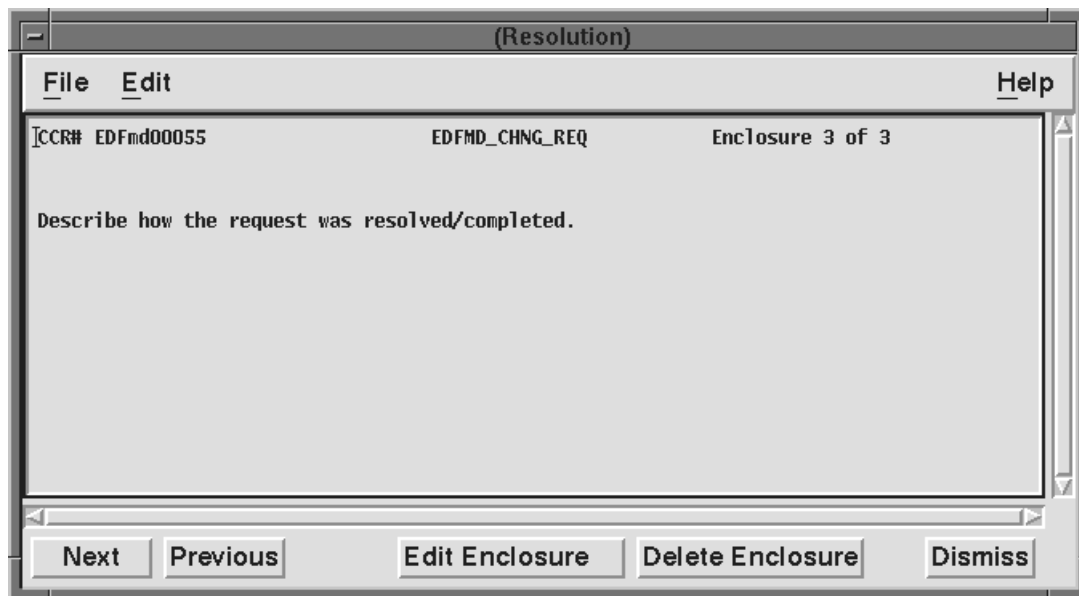
Figure 4.3.2-10. Resolution Enclosure Screen

The Resolution Enclosure Screen allows the operator to enter additional details in the same manner as described previously. After the enclosure has been saved, clicking the "Commit" button adds the Assign-Implement state's data to the database.

The Implement state (state entered when the proposed change has been developed) is the state that follows Assign-Implement on the Change_State Menu. There are no data fields associated with the Implement state. When Implement is selected, the status is simply changed to implement.

Following the Implement state on the Change_State Menu is the Assign-Verify state. The Assign-Verify state (state entered when the developed change is being assigned to an engineer for verification testing), data fields appear under the heading, "TESTING INFORMATION" as shown in Figure 4.3.2-11.

Figure 4.3.2-11. Assign-Verify State Screen

Descriptions of the Assign-Verify state fields are shown in Table 4.3.2-5.

Table 4.3.2-5. Assign-Verify Fields Descriptions

Field Name	Data Type	Size	Entry	Description
Test. Engr. Name	Character	25	Required	Name of the engineer designated to test the system change.
Test Org.	Character	5	Required	Name of the test engineer's organization. Answer must be one of the following: EDC, EOC, GSFC, LaRC, NSIDC or SMC.
Est. Testing Completion Date	Date	6	Optional	The date that the tester expects to have completed the testing activity. Required format is yymmdd.

Following the Assign-Verify state on the Change_State Menu is the Verify state, which is the state entered when a developed change has been tested and verified that it functions properly. The "Verify" state data fields appear under the heading, "VERIFICATION INFORMATION" as shown in Figure 4.3.2-12.

Figure 4.3.2-12. CDDTS Verify State Screen

Description of the Verify state fields are shown in Table 4.3.2-6.

Table 4.3.2-6. Verify State Fields Descriptions

Field Name	Data Type	Size	Entry	Description
Test Status	Character	1	Required	• This is an indicator as to whether or not the item (s) being tested has passed the test • Answer must be <u>P</u>assed or <u>F</u>ailed
Enclosure Added	Character	1	Required	• This is an indicator as to whether or not an enclosure has been to further describe the testing activity • Answer must be <u>Y</u>es or <u>N</u>o

Following the Verify State on the Change_State Menu is the Close state that is the state entered when all activity specified in the change request has been completed or that the approval authority has decided to close it prior to completion of all activity. The Close state data fields appear under the heading, "CLOSING INFORMATION" as shown in Figure 4.3.2-13.

Figure 4.3.2-13. CDDTS Close State Screen

Descriptions of the Close state fields are shown in Table 4.3.2-7.

Table 4.3.2-7. Close State Fields Descriptions

Field Name	Data Type	Size	Entry	Description
Closed By	Character	25	Required	Name of the individual that is closing the CCR.
Closing Date	Date	6	Required	• Date that the CCR is closed • Required format is yymmdd
Closer's Organization-	Character	5	Required	• Name of the closing official's organization • Answer must be one of the following: EDC, EOC, GSFC, LaRC, NSIDC or SMC

Refer to Chapter 2 of the Clear*DDTS User's Manual* for information about the Duplicate, Defer (Postpone), and Forward states shown on the Change_State Menu.

4.3.2.2.3 CDDTS Modify CCR

There are times when the operator needs to change the information entered previously into the database or to enter information into fields that were not completed initially. The Modify Menu,

shown in the middle of Figure 4.3.2-14 and in Figure 4.3.2-15, enables modification of database data.

Figure 4.3.2-14. CDDTS Main Screen (Modify)

Clicking the "Modify" menu on the main screen (Figure 4.3.2-15) brings up the modify options (Figure 4.3.2-16). Select the "Modify Record" option to change existing information and/or to enter information into fields left blank previously.

Figure 4.3.2-15. CDDTS Modify Menu Screen

The cursor appears at the first field that may be modified as shown in Figure 4.3.2-16. The modify record mode enables the operator to go through all of the fields that are associated with the current status of the CCR and make changes where appropriate. Once the changes have been made, clicking the "Commit" button on the main screen adds the changes to the database. Reference Chapter 6 (Viewing and Modifying Records) of the *ClearDDTS User's Manual* for additional information.

Figure 4.3.2-16. CDDTS Fields to Be Modified Screen

4.3.2.2.4   CDDTS Print CCR

Starting at the Main Screen as shown in Figure 4.3.2-17, the Options Menu or the "Print" button can be used to print a CCR.

```
┌─────────────────────────────────────────────────────────────────────┐
│ ▄                          ClearDDTS 4.1                           ▪ │
├─────────────────────────────────────────────────────────────────────┤
│  File    Select   Metrics   Options   Special/Support  To Do List    Help │
├─────────────────────────────────────────────────────────────────────┤
│       Change_Request' Records [SNAORTVCDPF] [EDFMD_CHNG_RE(31 records │
│  22 EDFmd00046 Change Permissions on server file        II  routine  N ▲│
│  23 EDFmd00037 Replace Board in Entry Workstation       II  urgent   N │
│  24 EDFmd00075 Final Check on Master Template           I   urgent   O │
│  25 EDFmd00008 Modify Email Template                    II  routine  P │
│  26 EDFmd00024 Revise Mail Notification List            II  routine  R │
│  27 EDFmd00060 Install Frontpage sofware on t1msh99     II  routine  R │
│  28 EDFmd00001 Test CCR                                 II  routine  T │
│  29 EDFmd00019 test test                                II  routine  T │
│  30 EDFmd00069 Sept. 16, 1999 CCR Submission            I   urgent   V │
│  31 EDFmd00080 Revise Data Input Screen                 II  routine  A ▼│
├─────────────────────────────────────────────────────────────────────┤
│ Submit  Commit  Clone       Refresh  Clear  Next  Prev  Print...    Gripe│
├─────────────────────────────────────────────────────────────────────┤
│                                                                       │
└─────────────────────────────────────────────────────────────────────┘

┌─────────────────────────────────────────────────────────────────────┐
│ ▄                            Record                                  │
├─────────────────────────────────────────────────────────────────────┤
│  Modify    Change_State   Links    CM                         Help   │
├─────────────────────────────────────────────────────────────────────┤
│                          EDFMD_CHNG_REQ                               │
│                                                     Page 1/3          │
│  CCR Number:  EDFmd00080       Submitted  : 991007    Revision:       │
│  Priority[*]: routine          Change Class[*]: II                    │
│  Status    : Assigned-Eval.    Enclosures  : 3                        │
│                                                                       │
│  Title:                                                               │
│   Revise Data Input Screen                                            │
│                                                                       │
│  CCR ORIGINATOR INFORMATION                                           │
│    Originator Name: Frank Pace                                        │
│    Organization   : LaRC                                              │
│    Phone Number   : (999)234-1289                                     │
│    Organization Evaluation Engineer: J. Bellamy                       │
│                                                                       │
│  CONFIGURATION MANAGEMENT ADMINISTRATOR                               │
│    CM Admin. Name: bfloyd                                             │
│    Organization[*]: LaRC                                              │
│    Phone Number  : (999)234-1830                                      │
│                                                                       │
├─────────────────────────────────────────────────────────────────────┤
│ ▄                          Enclosures                                │
├─────────────────────────────────────────────────────────────────────┤
│   ▤          ▤                ▤              ▤                        │
│ History  Proposed Change Impact Summary  Resolution                  │
└─────────────────────────────────────────────────────────────────────┘
```

Figure 4.3.2-17. CDDTS Main Screen (Print)

Clicking the "Print" button brings up the Printing Options Screen. See Figure 4.3.2-18. This screen provides the operator the capability to print a highlighted CCR or all of the CCRs in the index on the main screen in a full page, index, one line, or three-line format.

Figure 4.3.2-18. CDDTS Printing Option Screen

The Printing Options Screen also enables the operator to display the selected format on the monitor, print to a printer, or print to a designated file. Printing occurs when the desired option under "Where to Print" is highlighted and the appropriate information in the case of the printer and file options is supplied. Reference Appendix B (Setting Options) of the ClearDDTS User's Manual for additional details.

4.3.2.3 Required Operating Environment

For all COTS packages, appropriate information on operating environments, tunable parameters, environment variables, and a list of vendor documentation can be found in a CM controlled ReadMe file for each product. To find the ReadMe file for the CDDTS, use the XRP Baseline Manager to determine where in ClearCase the ReadMe file resides.

4.3.2.4 Databases

The CDDTS database is a proprietary database that is SQL compliant. The database is customized only to the extent that some additional fields have been added. Reference Appendixes F and G of the ClearDDTS Administrator's Manual for detailed information about the CDDTS database layout, the schema file, how to modify the database schema, and other information required to maintain or revise the CDDTS database.

4.3.2.5 Special Constraints

None

4.3.2.6 Outputs

CDDTS emails notification to designated personnel of newly submitted CCRs and when the status of the CCR changes.

4.3.2.7 Event and Error Messages

Standard CDDTS event and error messages are used. There are no messages unique to the ECS implementation. A list of the CDDTS event and error messages is not provided in the ClearDDTS User's and Administrator's manuals. However, messages provided during execution of CDDTS are self explanatory.

4.3.2.8 Reports

Standard CDDTS reports are to be used. Reference Chapter 7 and Appendix B of the ClearDDTS User's Manual for information concerning the printing of a CCR report and a description of the available report formats.

4.3.2.8.1   Sample Reports

Examples of CDDTS reports are presented in the sections below.

4.3.2.8.1.1   Sample Report (Full Page Format)

Figure 4.3.2-19 is a CCR report resulting from the use of the CDDTS Printing Option (full page format).

```
                          ECS_CHNG_REQ

                                                          Page 1/3

CCR Number: MSSdd00630  Submitted  : 960529   Revision:

Priority  : routine    Change Class: II

Status    : Closed     Enclosures  : 3

Title:

 Revise Data Input Screen (Example Only)


CCR ORIGINATOR INFORMATION

  Originator Name: Frank Pace

  Organization   : LaRC

  Phone Number   : (999)234-1289

  Organization Evaluation Engineer: J. Bellamy

CONFIGURATION MANAGEMENT ADMINISTRATOR

  CM Admin. Name: bfloyd

  Organization  : LaRC

  Phone Number  : (999)234-1830
```

Figure 4.3.2-19. CDDTS CCR Report (1 of 4)

```
                          ECS_CHNG_REQ

                                                     Page 2/3

CCR Number: MSSdd00630
ANALYSIS INFORMATION
 Evaluation Engineer : bfloyd

     Organization : LaRC

     Email Address: bfloyd@larc.com


 Impact Evaluators:

     1. GSFC    2. LaRC   3. EDF   4.     5.      6.

     7.      8.      9.      10.    11.     12.
  Sites Affected:

     1. GSFC    2. LaRC    3. SMC   4.      5.     6.

     7.      8.      9.


Related CCR# :
CI Affected  : Planning CSCI
Documents Affected:
Release Affected  : Release X
Baselines Affected:
```

Figure 4.3.2-19. CDDTS CCR Report (2 of 4)

ECS_CHNG_REQ

CCR Number: MSSdd00630

DISPOSITION: Approved   TESTING INFORMATION:

 CCB Approval Official: John Wana   Engr. Name: Joe Tester

 Date: 960607   Organization: LaRC

 CCB Organization: ESDIS   Est. Testing Completion

                Date: 960614

IMPLEMENTATION   VERIFICATION INFORMATION:

 Organization: SEO   Test Status (Pass/Fail): P

 Engineer: bfloyd   Enclosure Added (Y/N): N

 E-mail: efinch@eos.com

 Start Date: 960610

 Est. Time to Complete: 2 days

 Completion Date: 960612

 Effective Date: 960710

CLOSING INFORMATION:

 Closed by: Authur Closer   Date: 960618   Org.: SMC

************ Proposed Change ************

Need or Problem: Describe the need or problem.

The need is -----

Figure 4.3.2-19. CDDTS CCR Report (3 of 4)

Proposed Solution: Describe the proposed solution.

Suggest that the following capability be changed as follows:

- capability changes

************ Impact Summary ************

Summarize the impact statements received from the organizations requested to provide impacts.

Summary of impacts received from GSFC and EDF is ---------

Resources Summarized: [description of resources]

Technical Summary:

ROM Summary (BOE, Cost & Schedule):

Recommendation: [Insert Recommendation]

************ Resolution ************

Describe how the request has been resolved/completed.

This request has been resolved as follows:

- Capability x has been modified to ----.

Figure 4.3.2-19. CDDTS CCR Report (4 of 4)

4.3.2.8.1.2 Sample Report (Three Line Format)

Figure 4.3.2-20 is a sample CCR report resulting from the use of the CDDTS Printing Option, Three Line Format.

Submitted 960529, CCR# MSSdd00630, Originator Frank Pace

Title Revise Data Input Screen (Example Only)

Priority routine, Class II, CCB Org. ESDIS, Dips. Approved, Status Closed.

Submitted 960521, CCR# MSSdd00617, Originator Joseph Winkler

Title Add GUI to X11 Program (Example Only)

Priority routine, Class II, CCB Org. LaRC, Disp. Approved, Status Implemented.

Figure 4.3.2-20. CDDTS CCR Report: Three Line Format

4.3.2.8.1.3 Sample Report (Index Format)

Figure 4.3.2-21 is a sample CCR report resulting from the use of the CDDTS Printing Option (Index format). Fields displayed are CCR Identifier, Title, Change Class, Priority, and Status.

MSSdd00630 Revise Data Input Screen(Example Only) II routine C

MSSdd00617 Add GUI to X11 Program (Example Only) II routine R

Figure 4.3.2-21. CDDTS CCR Report: Index Format

4.3.2.8.1.4   Sample Report (One Line Format)

Figure 4.3.2-22 is a sample CCR report resulting from the use of the CDDTS Printing Option (One Line format). The operator selects the fields desired for the one line format. In this case, the Identifier, CCR Originator, Originator Organization, Implementing Organization, and Status fields were selected and their data values are displayed.

MSSdd00630 Frank Pace	LaRC	SEO	C
MSSdd00617 Joseph Winkler	GSFC	LaRC	R

Figure 4.3.2-22. CDDTS CCR Report: One Line Format

4.3.2.8.2   Report Customization

Refer to Chapter 9 of the ClearDDTS Administrator's Manual for an explanation of how to customize CDDTS reports. Chapter 9 explains how to customize reports provided by CDDTS and how to create and add new reports.

4.3.3 ClearCase Baseline Manager (BLM)

ClearCase BLM is a custom application specifically designed to serve as an efficient configuration management tool to manage the EMD Baseline. It generates and maintains records that describe what comprises baselined operational system configurations for the DAACs, SMC, VATC, PVC, and the Landover EDF2 Evolution hosts. These records identify baselined versions of hardware and software items as well as their assembly structures and interdependencies. ClearCase BLM keeps chronological histories of baseline changes and traceability of items to predecessor versions and system releases. In addition, the tool provides visibility to CCR approved baseline changes, as well as references to associated Release Notes documents.

ClearCase BLM does this by maintaining a set of ClearCase version-controlled elements along with scripts and internal information about how they relate. Control item records represent physical resources such as COTS software and host names assembled to form operational systems, as well as logical artifacts such as baselines and other configuration items. They are designated to relate system entities directly to discrete responsibilities and actions associated with configuration management of the system. ClearCase BLM's catalog of control items is called the /ecs/cm/CIDs directory record set. The ClearCase BLM tool is an enhanced ClearCase GUI that uses the power of the ClearCase code management system to manage the GUI scripts, records, and scripts used to manage the baseline. Baseline records can only be affected with approved CCRs.

The most significant relationship maintained among control items is product structure. Product structure is the term for the ClearCase BLM data constructs that define the ingredients – or bill of material -- for a site. Product structures have corresponding CCR approval dates that establish the baseline change effectivity dates, and they reference CCRs numbers, as well as Release Notes.

ClearCase BLM is installed only at Raytheon Landover, MD, where it used by CM personnel to manage baseline data about resources deployed to all external ECS sites, including the DAACs and the SMC, as well as the three internal ECS sites, the PVC, VATC, and the EDF2 string (Evolution). The EMD Baseline Information System (EBIS) is available to Landover at URL http://pete.hitc.com/baseline/. Also, each site has an EBIS that is served locally. These EBIS sites are served from m0mss16, e0ins01, g0ins01, l0ins01, and n0ins02. Each site manages access to their EBIS file system. In the course of baseline updates, the data is replicated from "pete" to the other 5 EBIS servers. Each site offers a consolidated view of baseline data system-wide, as well as site-specific views. ClearCase BLM generates specific baseline reports that can be viewed, printed, or saved in a file. These reports are automatically formulated, posted to "pete", and then replicated to the external servers. As part of Evolution, the Solaris 8 host "pete.hitc.com" has been replaced by Linux host "c4cbl02.hitc.com". To maintain transparency to the Landover users, an alias was created so that the usual EBIS URL could be used. The Landover EBIS though is now served from Linux host "c4cbl02.hitc.com".

4.3.3.1 Internal ClearCase BLM Data Constructs

The ECS baseline data for COTS S/W, COTS S/W patches, Operating Systems, O/S patches, data files, databases, ECS hosts and host functions, resides in ClearCase as "text_file" elements. A default configuration specification is used to view the information, using the CM_MASTER view tag name.

A variety of files and methods hold this information, which are explained in detail below. Note that the architecture of the data design portion of ClearCase BLM minimizes the number of steps to update the baseline, by either implementing new CCRs or correcting previously entered CCR data.

There are 10 data constructs described below. One or more constructs is referenced by scripts in order to generate the specific Baseline Reports.

4.3.3.1.1 Control Item Identifiers

This describes the Control Item Identifiers (CIDs) for the ECS COTS S/W. The ClearCase directory that holds all of the CIDs is /ecs/cm/CIDs/. Within this directory are ClearCase text_file elements. Text_file elements are used because they can be directly edited, and they require the least amount space for storage.

Each CID is a Comma Separated Variable (CSV) formatted file, which means that each of the fields used a comma (,) as a delimiter. This format was chosen since the files can be readily exported/imported with Microsoft Windows products, such as Excel. The record format for each CID is contained on one line, and consists of 16 items, described below:

1) ECS NAME - This is the name of the ECS COTS S/W, using a familiar nomenclature. The ECS NAME may contain 30 characters or less, with no embedded commas. Other restricted characters are: !, @, #, $, %, ^, &, *, ~, `, ?. These characters have special meaning in the UNIX Operating System.
2) COMMODITY CODE – A character used to convey the procurement nature of the COTS product. This field is 1 character, and can be a "P" to mean Purchased, and "F" to mean Freeware, an "S" to mean Shareware, or a "-" to mean "unknown". These four characters are the only characters known to the algorithms that reference this field.
3) RESP ORG – This is the Responsible Organization, or the group which has the most knowledge regarding the use and placement of the product. A maximum of 6 characters may be used to represent the RESP ORG item within each CID record. A "-" indicates that the RESP ORG is unknown.
4) VARIANT – This item may use at most 10 characters, and is the host O/S that would have this COTS S/W installed. Current variants are "Solaris", "IRIX", "Linux", "Windows", and "AIX".
5) MFR/DEV NAME – This is the manufacturer or developer of the COTS S/W. A maximum of 30 characters can be used to represent the name of the manufacturer or developer. A "-" indicates that the MFR/DEV NAME is unknown.

6) VERSION – This is the version of the COTS S/W. Specifically, the version nomenclature used by ClearCase BLM is the manufacturer nomenclature. The manufacturer nomenclature may contain "minor" version information that may not be known, but must be represented in the baseline data for accurate tracking and identification. A "-" indicates that the VERSION is not known. A maximum of 21 characters can be used to represent the VERSION.

7) PRINCIPAL DIRECTORY – A maximum of 50 characters conveys the installation location. Nearly all COTS S/W resides in multiple sub directories. To keep the installation location reasonable, the highest sub directory is represented. All of the COTS S/W must reside at the PRINCIPAL DIRECTORY or lower. A "-" indicates that the PRINCIPAL DIRECTORY is unknown.

8) CONTROL ITEM ID – A Control Item Identifier is a 9 character string which uniquely identifies a record with the /ecs/cm/CIDs ClearCase BLM directory. The first character is always a "B", and is always followed by an 8 character integer. The storage of this value in the record, which is also the file name within the /ecs/cm/CIDs directory, provided redundancy.

9) COMMENT – In order to provide clarification, a maximum of 60 characters may be used. Commas may not be used, as well as the character set described in the ECS NAME field in 1).

10) CRITICAL ITY – Each COTS S/W is either Critical or Not Critical. A Critical COTS S/W product is required in order that the custom software may operate on the installed host. The CRITICALITY is either "YES", "NO", or "-" for unknown. This field must be equal to or less than 3 characters in length.

11) ITEM SUBCLASS – A maximum of 7 characters may represent the item subclass. Typical subclasses are "program" or "OS", and describe a major category in which the COTS S/W belongs. Nearly all CIDs are either "program" or "OS" (Operating System). A "-" indicates that the ITEM SUBCLASS is unknown.

12) REF CODE – A REF CODE may be at most 1 character, and is a Reference Code. A "-" indicates that the Reference Code is unknown.

13) CSCI – Computer Software Component Identification – A CIDs CSCI may be at most 5 characters. A "-" indicates that the CSCI is unknown.

14) RELEASE NOTES – Usually, but not always, a COTS S/W product uses a Software Release Notes document to provide installation instruction, installation hosts, and a variety of other pieces of information. The format of this record may use a maximum of 16 characters. A typical Release Notes field looks like "914-TDA-223". A "914-TDA-xxx" is used if the Release Notes is not known.

15) CCR – Configuration Change Request. As any baseline change requires a CCR, it is useful to contain this number in the CID record. A CCR may contain up to 7 characters, but usually 6 characters are sufficient. A CCR looks like "03-0205". Rev 1 to CCR "03-0205" would be "03-0205A". Change records for which no CCR could be found are "03-0010E". The suffix "E" indicates that the CID is real, however a relating CCR could not be obtained from and Configuration Management records.

16) EFFECTIVITY DATE – For the ClearCase BLM tool, the effectivity date is the CCR approval date. This date signals that the change request is approved. The

EFFECTIVITY DATE max contain a maximum of 8 characters, and is of the format mm/dd/yy, e.g., "03/28/03".

All ClearCase BLM CIDs originated from XRP-II BLM CIDs. The CID format originated from XRP-II. In order to check the XRP-II data export into ClearCase BLM, the CID nomenclature was kept identical.

4.3.3.1.2 Current Hosts List

The Current Hosts list contains all of the ECS baseline hosts. The ClearCase path is "/ecs/cm/host_data/current_hosts". The UNIX file date for this file is the timestamp to indicate when the file was last changed.

There are as many lines to the file as there are current hosts. There are four fields within each record. Column 1 is the ECS host name. Column 2 is the ECS sub system to which the ECS host belongs. Column 3 is the CSCI for the ECS host, and column 4 is the ECS host major function.

1) <u>ECS Host Name</u> – This is the string returned from "uname –n" while logged onto the ECS host. Host name formats are 7 letters, generally. The first letter designates the ECS site, "e" for EDC, or LP DAAC, "g" for GSFC, "l" for LaRC, "n" for NSIDC, "m" for SMC, "p" for PVC, and "t" or VATC. Also, the letters "c", "d", "f", and "i" designate the new Landover Linux Evolution hosts. (e.g., "c4cbl01")
2) <u>ECS Host Subsystem</u> – This is the ECS functional component. The sub system name is three letters followed by the word "Subsystem". The second column is always exactly 13 characters long, e.g "AST Subsystem".
3) <u>CSCI</u> – A specific set of up to 5 characters which identify the Computer Software Component Identification.
4) <u>ECS Host Major Function</u> – Each ECS host exists for a purpose. The purpose is stated in column 4 of this construct, and may contain a maximum of 30 characters.

4.3.3.1.3 Data List

In order to emulate the earlier XRP-II reports, this construct was created. There are two entities that are present in the reports, "data" and "databases". The Data List construct exists to provide the "data". This construct path is /ecs/cm/BLM/host_data/data, and is a Clearcase text_file element that is directly editable. It is a CSV formatted file.

Each record (line) within this file is comprised of 7 fields:

1) <u>ECS Host Name</u> – This is the name of the hosts, e.g., "e4eil01". The name can be a maximum of 10 characters.
2) <u>Data Name</u> – This is the data that is conveyed by the Construct. A typical data name is "Production data", or "Ingest files". The Data Name can have a maximum of 50 characters.
3) <u>Data Version</u> – This is the version of the Data Name. This can be at most 7 characters, and represents the major version of the data, such as "6A".
4) <u>Data Construct Type</u> – For this construct, the fourth field must always say "data".

5) <u>Data CID</u> – Data Control Item Identifier. This field has a CID format entry, and has to be exactly 9 characters in length.
6) <u>Data CSCI</u> – Computer Software Component Identification – A CSCI may be at most 5 characters.
7) <u>Data Responsible Organization</u> – The cognizant ECS organization for the data; the owner of the data. This field may be a maximum of 6 characters.

4.3.3.1.4 Databases List

In order to emulate the XRP-II reports, this construct was created. There are two entities that are present in the reports, "data" and "databases". The Databases List construct exists to provide the "databases."   This construct path is /ecs/cm/BLM/host_data/databases, and is a Clearcase text_file element that is directly editable. It is a CSV formatted file.

Each record (line) within this file is comprised of 8 fields:
1) <u>ECS Host Name</u> – This is the name of the hosts, e.g., "e4eil01". The ECS Host Name name can be a maximum of 10 characters.
2) <u>Database Name</u> – This is the data that is conveyed by the Construct. Database name examples are "Autosys DB", or "DDTS db". The Database Name can have a maximum of 50 characters.
3) <u>Database Version</u> – This is the version of the Database Name. This can be at most 7 characters, and represents the major version of the database, such as "6A".
4) <u>Database Construct Type</u> – For this construct, the fourth field must always say "database".
5) <u>Database CID</u> – Database Control Item Identifier. This field has a CID format entry, and has to be exactly 9 characters in length.
6) <u>Database Code</u> – A single character, either blank, or the letter "I".
7) <u>Data CSCI</u> – Computer Software Component Identification – A CSCI may be at most 5 characters.
8) <u>Data Responsible Organization</u> – The cognizant ECS organization for the database; the owner of the database. This field may be a maximum of 6 characters.

4.3.3.1.5 Hosts' Functions List

In order to emulate the earlier XRP-II reports, this list was created. In the ClearCase BLM 920-TDx-002 Hardware/Software Map reports, there may be a few lines, just after the host name, that describe more host attributes, or functions, such as " FLEXlm License Server", or "NIS Master Server".   This construct path is /ecs/cm/BLM/host_data/host_functions, and is a Clearcase text_file element that is directly editable. Each record consists of two column groupings.

Each record (line) within this file is comprised of the following:
1) <u>ECS Host Name</u> – This is the name of the host, e.g., "e4eil01". The ECS host name can be a maximum of 10 characters. The ECS host name must begin in column 1.
2) <u>Host Function</u> – This is a text string with a maximum of 50 characters. This descriptive text provides information regarding host functionality. The Host Function text must begin in column 14, in order for the data to align correctly in the reports. Embedded commas are permitted in this construct.

Note that the spacing of the host name and the text appears in the record lines exactly in the output 920-TDx-002 reports. No reformatting of the data is performed in the generation of the reports.

4.3.3.1.6 Control Item Identifier Type List

In order to emulate the original 910-TDA-003 report, another piece of information is required. This is the category to which the CID belongs. Examples of these CID functional groupings are: Compilers, Editing & Viewing, Operating Systems, and the like.

Each record of this file consists of two column groupings:

1) Functional Group Name – The first character of the string must be placed in column 1. The string length may be up to 38 characters.
2) CID – Control Item Identifier number. This number must exist with the /ecs/cm/CIDs directory, described above as Data Construct 1. The 9 character CID must begin in column 39.

4.3.3.1.7 Operating System Patch Sets

Patch_sets are described in this section. These are sets of information, residing in the directory /ecs/cm/BLM/patch_sets/. There are about 20 patch sets that are named according to their function. A patch set name may be up to 30 characters in length. An example Patch Nomenclature name is "IRIX_core". Each line within a patch set (record) is comprised of 6 column groupings, and are described below:

1) Patch Nomenclature – This is a name of the patch set. The string must start in column 4, and may use up to column 27, for a total maximum character length of 24 characters.
2) Patch Description – A comment-like character string that adds information value and detail to the Patch Nomenclature. This data must start in column 29 and be complete by column 83 (or a maximum string length of 55 characters).
3) Patch reference – With each patch release, there is a related Release Notes Technical Document, e.g., 914-TDA-087, or a related Patch Technical Document, such as 911-TDA-011. This field begins in column 85 and is 16 characters in length (to column 101).
4) CCR – This is the CCR number which authorized its placement in the ECS baseline. Columns 107 through 114 house the CCR number.
5) Release Notes tech doc - With each patch release, there is a related Release Notes Technical Document, e.g., 914-TDA-087. This field begins in column 118 and is 16 characters in length (to column 133).
6) ECS Subsystem – Up to three characters long, this field relates the patch information to the cognizant sub system, such as "IDG".

Note that the column positions are critical; the generated 920-TDx-014 Patch Maps take these records and directly import them into the records with no reformatting.

With the introduction of the Linux Operating System, all RPMs (Package Manager) are now baselined. These are the functional equivalents to the Solaris 8 and IRIX Operating System

patches. Please reference the new Technical Document 911-TDA-014, for example, to view the Linux method for patching the Operating System.

4.3.3.1.8 Configuration Change Request (CCR) Data

The ClearCase BLM Tool relates all change requests to the items changed, including an effectivity date. This date is the effective date for which the change pertains. CCR information is stored in Data Construct 8. This construct exists as directory /ecs/cm/CM. Under this directory are sub directories, one for each year for the CCRs. For the year 2003, the sub directory name is 2003_CCRs. So any 2003 year CCRs are found in the path:

/ecs/cm/CM/2003_CCRs/.

For each CCR, another sub directory exists, which consists of the last four digits of the CCR, or five digits is the CCR has been revised, like "0188A". The first two digits of the CCR represent the year. So for the example of the CCR 03-0188A, a directory /ecs/cm/CM/2003_CCRs/0188A/. exists. Data Construct 8 is probably the most important of all the Data Constructs, as it provides the relations of the CIDs to the ECS hosts. For each CCR sub directory, there are the following sun constructs:

1) "CID_map" file – This file, always named "CID_map", provides the relations of the Machine Impacted file(s) (MI) to the CIDs. It always has at least one line, but may contain more than one line, as a single CCR may relate more than one CID to a host set (MI) file. It has two columns. The first column is the name of an "MI" file, up to 20 characters in length.
2) "MI" file(s) – This is an abbreviation for the "Machines Impacted" file. The source of this information is derived from the CCR's Release Notes document (914-TDA-xxx). Within the Release Notes document is a section that describes *which hosts* should receive *what COTS S/W*. Most CCRs have a CID_map file with only one MI and CID. The next most common arrangement is to have two variants, and SGI and a Sun variant. In this case there are two lines in the CID_map file. One line, MI_Sun, maps to the Sun variant of the CID. The other line maps the MI_SGIs to the SGI CID for the CCR.
3) CCR pdf file – This file is the Portable Data Format (Adobe) CCR.

4.3.3.1.9 ClearCase BLM Sequencer

A single file, "/ecs/cm/BLM/scripts/Sequencer", controls which CCRs, and in what order, are applied to the baseline. This editable yet executable file provides the mechanism for relating the application of CCRs, their MI files and CID_maps, to populate what is known as the "dartboard" area. The first record in this file applies the first CCR to a "null," or empty baseline. The last record applies the last CCR to the "dartboard". The format of each record of this file is:

1) Function Call – This is always the same string, "/ecs/cm/BLM/scripts/Implement_CCR". This function applies the first argument of the call, which is the CCR, to the "dartboard".
2) CCR – Configuration Change Request. A number that identifies a change to a baseline. It authorizes the application of a COTS S/W product to an ECS host or set of ECS hosts.

3) <u>Comment 1</u> – This comment is the "function", or COTS S/W name, of the CCR.
4) <u>Comment 2</u> – The CCR approval date (Effectivity Date)
5) <u>Comment 3</u> – This is the Release Notes Tech Doc number, which is referred in the CCR.

4.3.3.1.10 ClearCase BLM Dartboard

The ClearCase Derived Objects, located within the "/ecs/formal/BLM/dartboard" directory, comprise the Dartboard. This directory contains one file representing the collective assembly of all applicable COTS S/W products as authorized by approved CCRs for each ECS host. COTS S/W application is performed by using file concatenation. The first CCRs (earliest) show up first in these dartboard files. The last applied CCR shows up as the last record in these files.

Each dartboard file name is an ECS host, like "e4eil01".

The format of each line in a host dartboard file is as follows:
1) <u>ECS host name</u> – This is the ECS host name.
2) <u>Authorizing CCR</u> – This is the CCR from the Sequencer file.
3) <u>BLM Tool user</u> – This is an authorized User of the ClearCase BLM tool.
4) <u>Timestamp</u> – This is the time at which the CCR was applied to the file in the dartboard.
5) <u>CID Echo</u> – This is the entire contents of the CID record, as specified by the CCR's CID_map, MI files, and CID reference.

Note that Data Construct 10 is a ClearCase derived object, and is not "checked-in" like the first Data Constructs. The dartboard directory, in conjunction with the "/ecs/cm/BLM/host_data/current_hosts" file, Is used to populate the 920-TDx-002 Hardware Software Map Technical Documents.

4.3.3.2 ClearCase BLM Graphical User Interface (GUI)

The ClearCase BLM tool makes use of an OSF Motif graphical user interface. This provides convenient drop down menus, and provides a convenient method for dynamically formulating the contents of the drop down menus. The ClearCase BLM tool has been ported to the Linux operating system. Currently, it may either be launched on Solaris 8 host "xserv01", or Linux host "c4cbl01." The GUI now uses "emacs" for certain text editing windows, rather than Solaris 8 "textedit."

4.3.3.2.1 ClearCase BLM "NEW CCR" GUI Drop Down Menu

Use the "New_CCR" ClearCase BLM Tool GUI to enter data associated with newly approved CCRs. The amount of GUI traversal and data input has been optimized to minimize the time needed to process approved CCRs. Refer to Figure 4.3.3-1 to view the New CCR drop down menu.

The first thing to do is to enter the new CCR number. A quick check is made to ensure that the CCR number is indeed a new CCR number, one that does not exist in the database. Extensive syntax checking is performed to ensure that the entered CCR number is of the correct format and

has the hyphen character. See Figures 4.3.3-2 through 4.3.3-9 for the new CCR entry user interface and subsequent screens.

The next set of steps taken depends on the nature of the CCR. A COTS S/W CCR will only affect the 920-TDx-002 Maps for instance, while O/S patch changes will affect the 920-TDx-014 reports.

For COTS S/W changes, a new CID usually needs to be created. Use the "Construct new CID" menu item in the "New_CCR" main menu bar to construct the new CID. Script has been written to easily perform this task. Usually and existing CID can be copied, and only minor adjustments made, such as the CCR approval date or Release Notes document number, and usually the COTS S/W version number. This CID is then "committed" to the database (/ecs/cm/CIDs), and is later referenced in the CID_map file for the new CCR.

Also, a Machines Impacted (MI) will need to be created. This MI file and the new CID will be associated in the CID_map file. Depending on the CCR, more than one MI file linking with another new CID may be required. Perform these steps as needed, then commit the CCR as the last step. Committing the CCR will checkin the CID_map file, any new MI files, and finally the CCR itself.

The Sequencer is then updated. Usually the CCR is added to the end of the Sequencer. Sometimes, earlier entries or CCR constructs may need to be edited, so that more than one version of a COTS product will not appear in the 920-TDx-002 reports.

Other more infrequently used data may need to be altered, and this just depends on the nature of the CCR. To remove an ECS host for example, select the "Update Current ECS Hosts" menu line item, and delete the ECS host. If a new CID is added to the database, its function must also be added using the "Update CID Functions" line item.

Selecting the "Build Baseline" line item will generate all of the ClearCase BLM reports, and selecting the "Promote Baseline" line item will place all of the reports in the proper directories on "pete" and "cmdm". These two functions save hours of labor and ensure a consistent product.
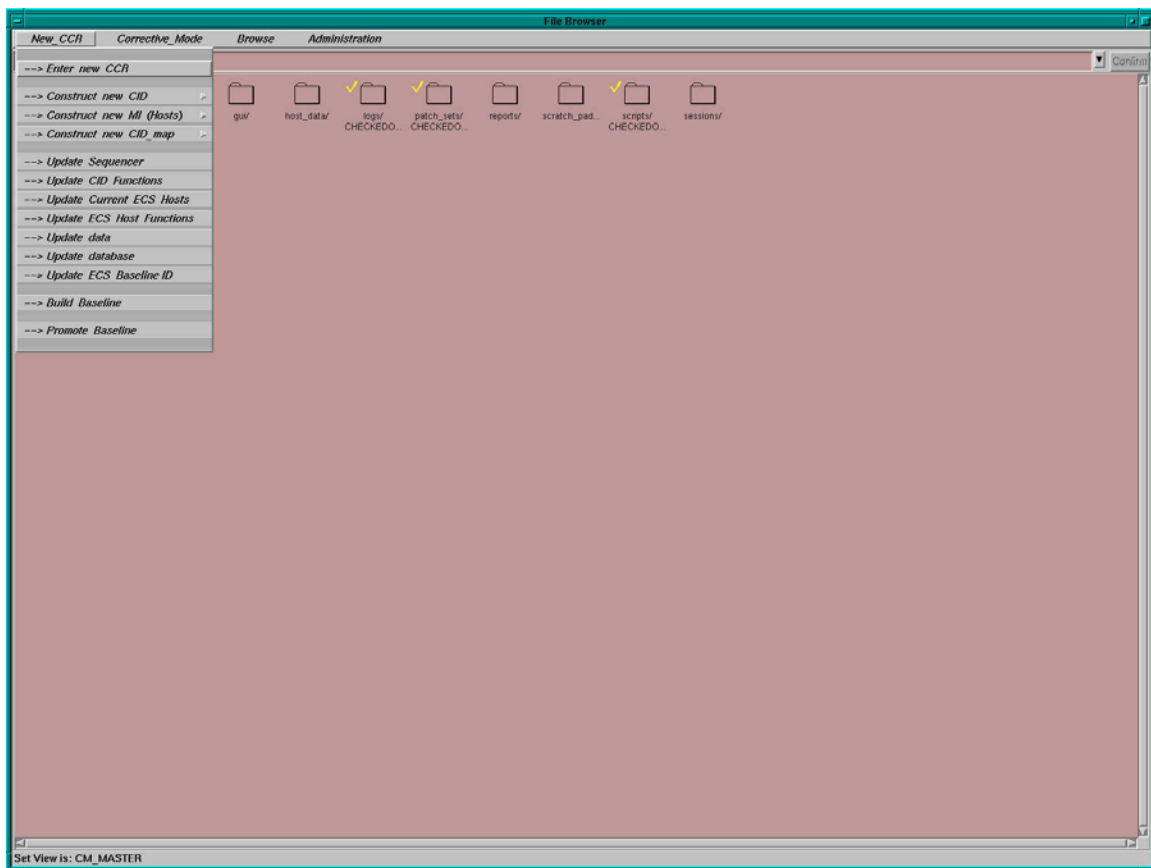
Figure 4.3.3-1. New CCR Drop Down Menu
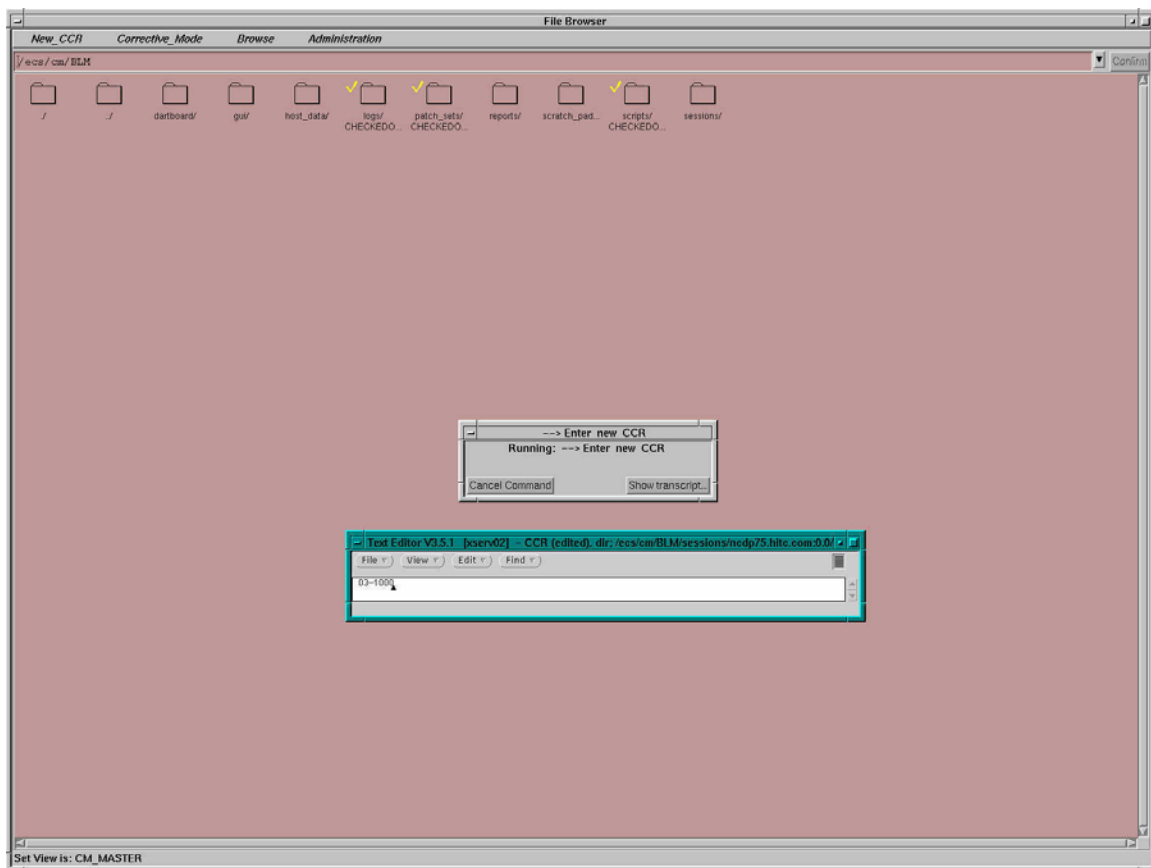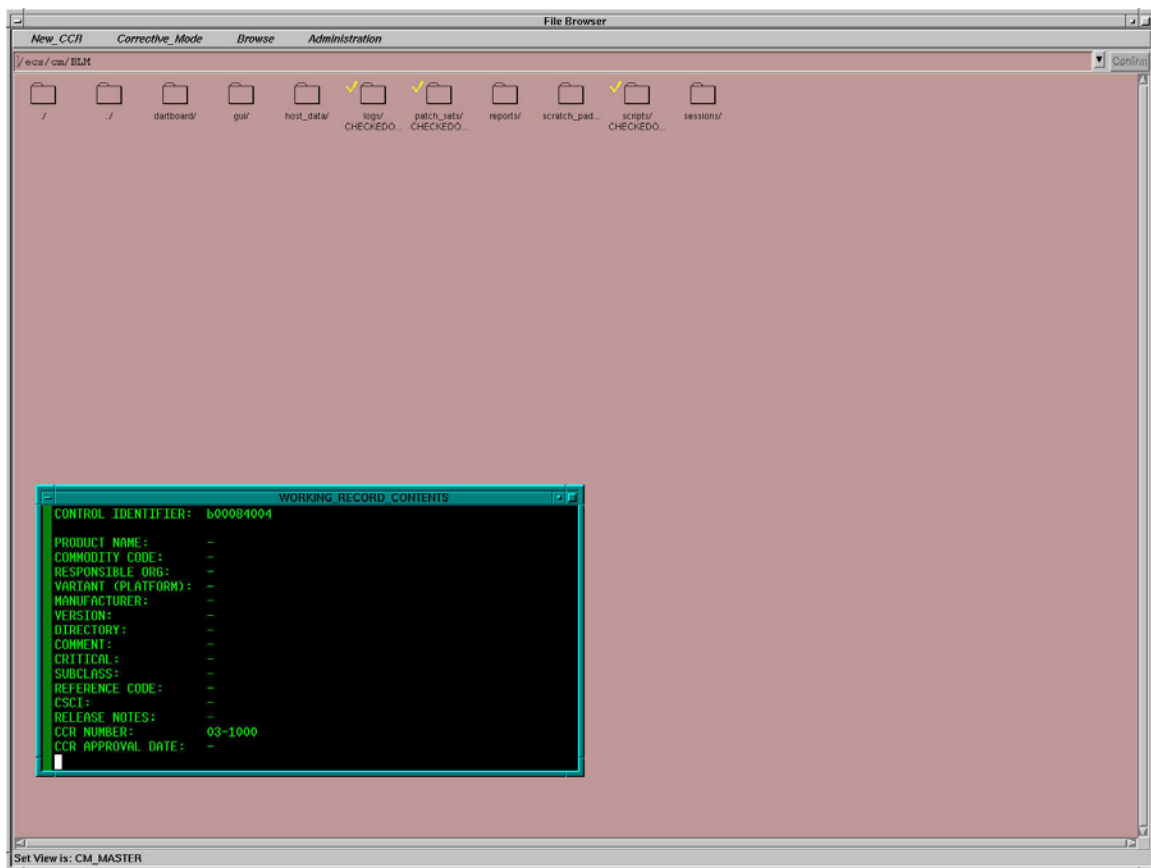
Figure 4.3.3-2. Entering a New CCR Number
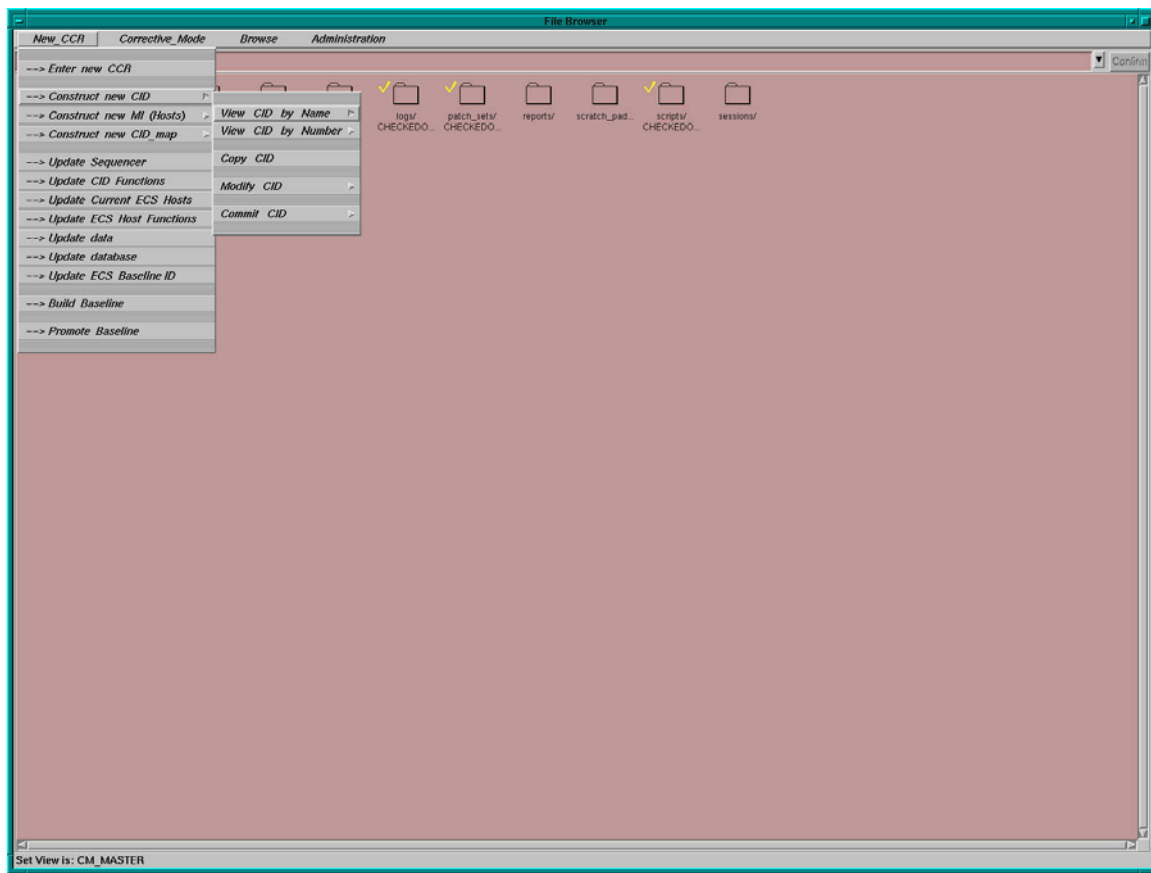
Figure 4.3.3-3. Working Record Contents for a New CCR

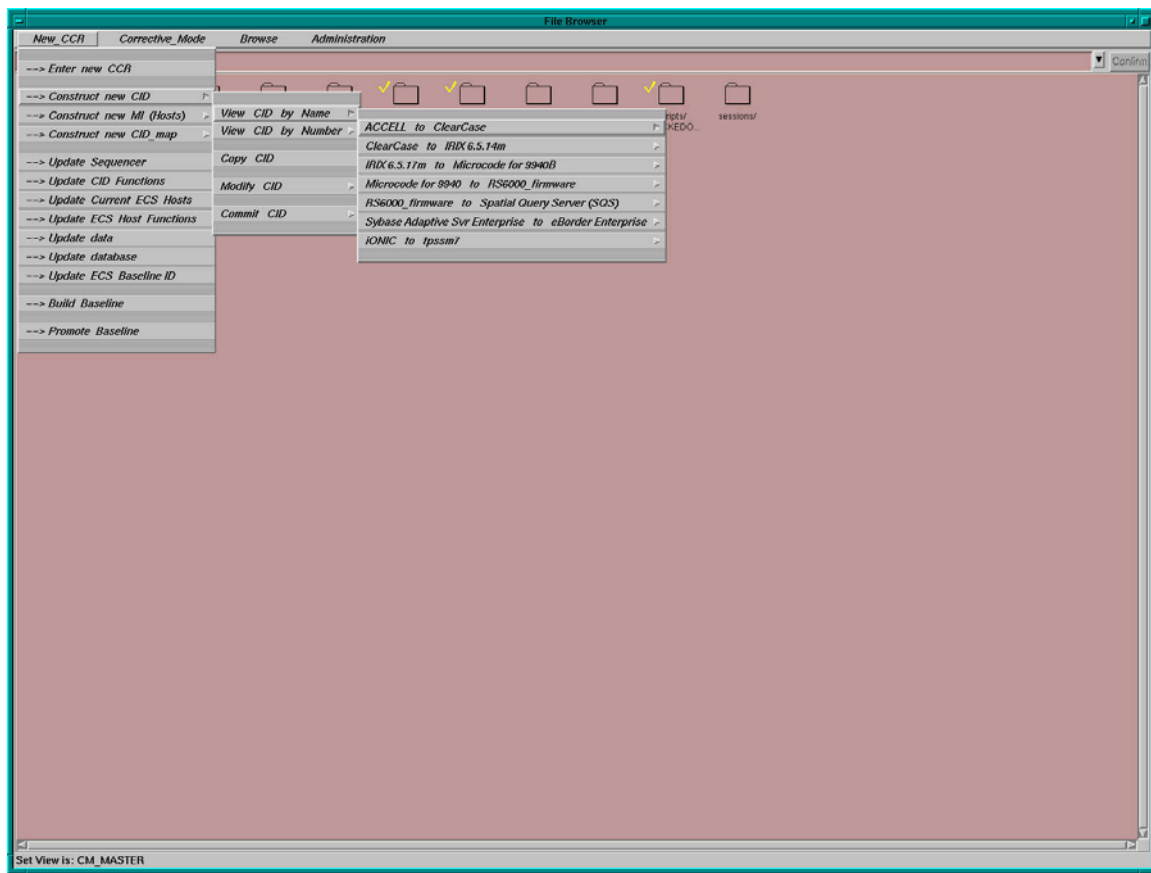**Figure 4.3.3-4. New CCR Drop Down with Construct New CID Selected**

Figure 4.3.3-5. View CIDs by Name Drop Down Sequence

File Browser

New_CCR   Corrective_Mode   Browse   Administration

Confirm

--> Enter new CCR

--> Construct new CID
--> Construct new MI (Hosts)
--> Construct new CID_map

--> Update Sequencer
--> Update CID Functions
--> Update Current ECS Hosts
--> Update ECS Host Functions
--> Update data
--> Update database
--> Update ECS Baseline ID

--> Build Baseline

--> Promote Baseline

View CID by Name
View CID by Number

Copy CID

Modify CID

Commit CID

ACCELL to ClearCase
ClearCase to IRIX 6.5.14m
IRIX 6.5.17m to Microcode for 9940B
Microcode for 9940 to RS6000_firmware
RS6000_firmware to Spatial Query Server (SQS)
Sybase Adaptive Svr Enterprise to eBorder Enter
iONIC to Tpssm7

--> b00083918 Sybase Adaptive Svr Enterprise SGI 12.5.0.1 (EBF 10433) /usr/ecs/OPS/COTS/sybase
--> b00083304 Sybase Adaptive Svr Enterprise SUN 11.9.2 (EBF 9741) /usr/ecs/OPS/COTS/sybase1151
--> b00083832 Sybase Adaptive Svr Enterprise SUN 12.0.0.5 (EBF 10157) /usr/ecs/OPS/COTS/sybase120
--> b00083766 Sybase Adaptive Svr Enterprise SUN 12.5 (EBF10235) /usr/ecs/OPS/COTS/sybase1151
--> b00083764 Sybase Adaptive Svr Enterprise SUN 12.5 (EBF10235) /usr/ecs/OPS/COTS/sybase125
--> b00083852 Sybase Adaptive Svr Enterprise SUN 12.5.0.1 (EBF 10423) /usr/ecs/OPS/COTS/sybase125
--> b00083882 Sybase Central PC 3.2 C:Program Files~
--> b00016272 System Bootstrap EHUB 12.1 n/a
--> b00083414 TCL/Tk SGI 8.3.3 /tools/tcl/bin
--> b00015434 TCL/Tk SUN 8.0_Pt_4 /tools/tcl/bin
--> b00083416 TCL/Tk SUN 8.3.3 /tools/tcl/bin
--> b00016306 TCP Wrappers SGI 7.6 /etc/wrappers/tcpd
--> b00016305 TCP Wrappers SUN 7.6 /etc/wrappers/tcpd
--> b00083378 TP9400 73GB Drive SGI FA17 n/a
--> b00083376 TP9400 NVSRAM SGI NV47741RX863009 n/a
--> b00083374 TP9400 RAID Controller SGI FW4.00.01.06 n/a
--> b00083922 TPSSM Software SGI 5.0 /opt/tp9400/bin
--> b00083923 TPSSM Software SGI 6.0.1 /opt/tp9400/client
--> b00084003 TSAPD SGI 2.3 /usr/etc/ts
--> b00078454 TimeServ PC 4.0SP6 (TBS)
--> b00083358 Tomcat SUN 3.2.3 /usr/ecs/OPS/COTS/tomcat
--> b00016373 Top SUN 3.4 /tools/bin
--> b00083646 Top SUN 3.5beta12 /tools/bin
--> b00016369 Traceroute SGI 1.17 /tools/bin
--> b00016396 Tripwire SGI 1.3 /usr/local/bin/tw
--> b00083174 Tripwire SUN 1.3.1 /usr/local/bin/tw
--> b00083352 Velocity SUN 1.1 /usr/ecs/OPS/COTS/velocity
--> b00083666 Velocity SUN 1.2 /usr/ecs/OPS/COTS/velocity
--> b00083628 Veritas Volume Manager SUN 3.0.4 /opt/VRTSvmsa/bin
--> b00083838 Veritas Volume Manager SUN 3.2 /opt/VRTSvmsa/bin
--> b00083408 Visual Workshop for C++ SUN 3.0 /opt/SUNWspro/bin
--> b00083990 WU_FTPD SGI 2.6.2 /usr/local/sbin
--> b00083728 WU_FTPD SUN 2.6.2 /usr/local/sbin
--> b00083354 WebGLIS SUN 3.2.1 /usr/ecs/OPS/COTS/webglis
--> b00083840 WhatsUp Gold PC 7.03 C:Program Fileswhatsupgold
--> b00038322 Windows 2000 PC 2000 c:programfileswhatsupgold
--> b00016473 XRP II SUN 3.1.3 /usr/ecs/OPS/COTS/xrp
--> b00083935 Xerces SGI 2.0.1 /usr/ecs/OPS/COTS/jdom
--> b00083933 Xerces SUN 2.0.1 /usr/ecs/OPS/COTS/jdom
--> b00083960 eBorder Enterprise IBM 3.5 11/01 /op7/EBORDER
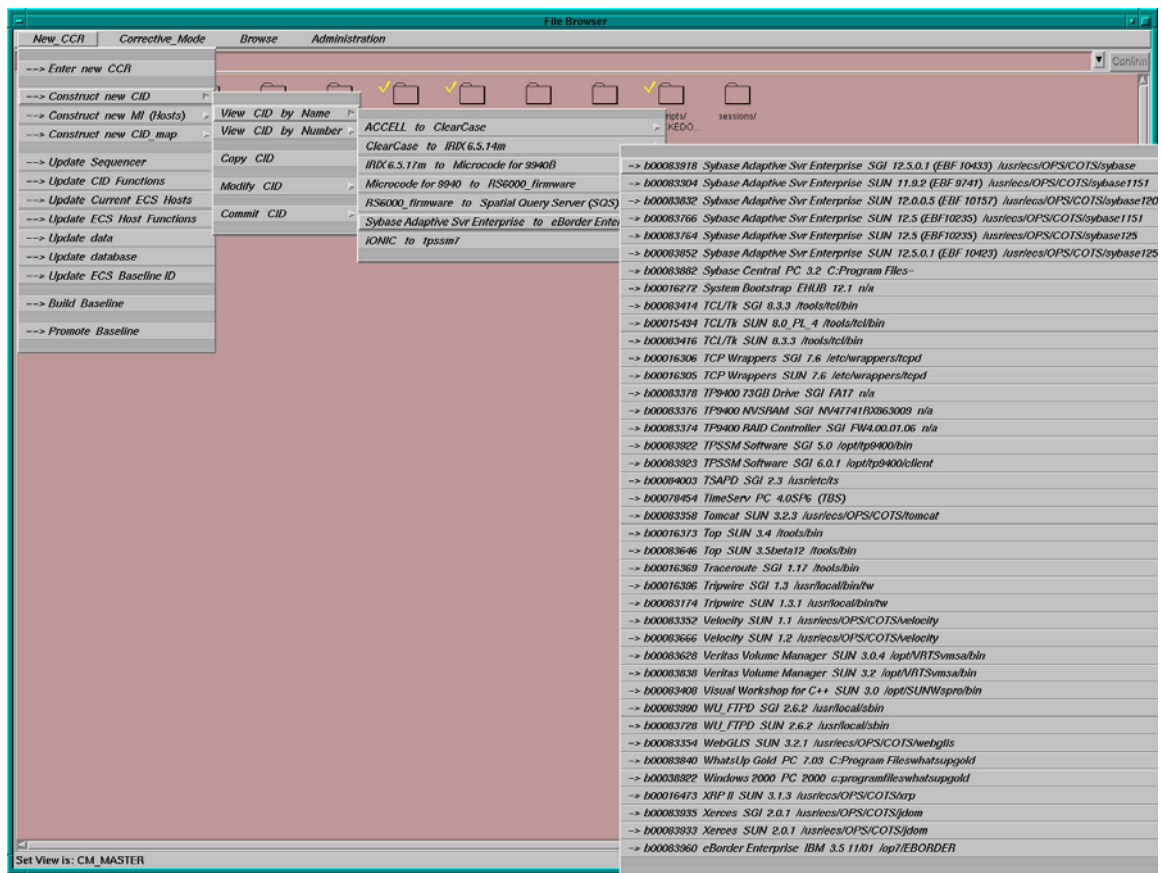
Set View is: CM_MASTER

Figure 4.3.3-6. COTS Software Selection Drop Down

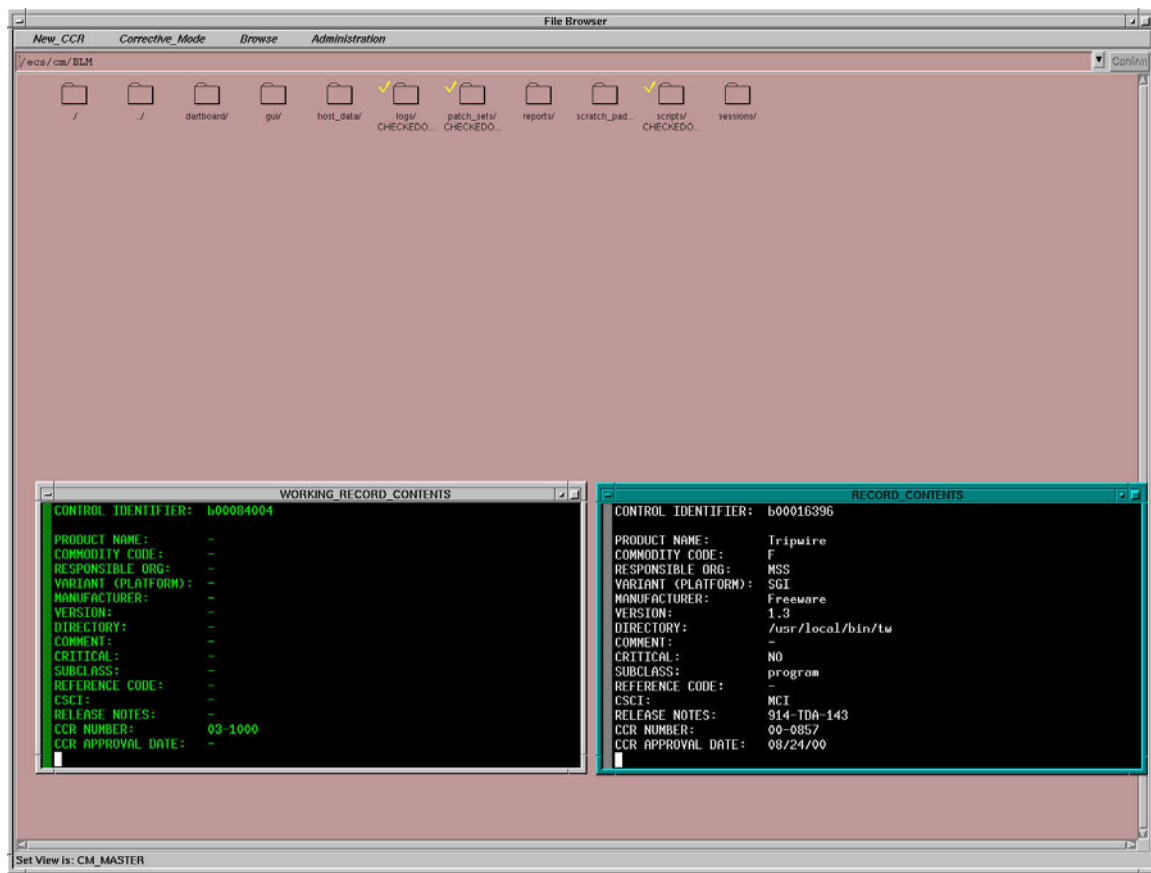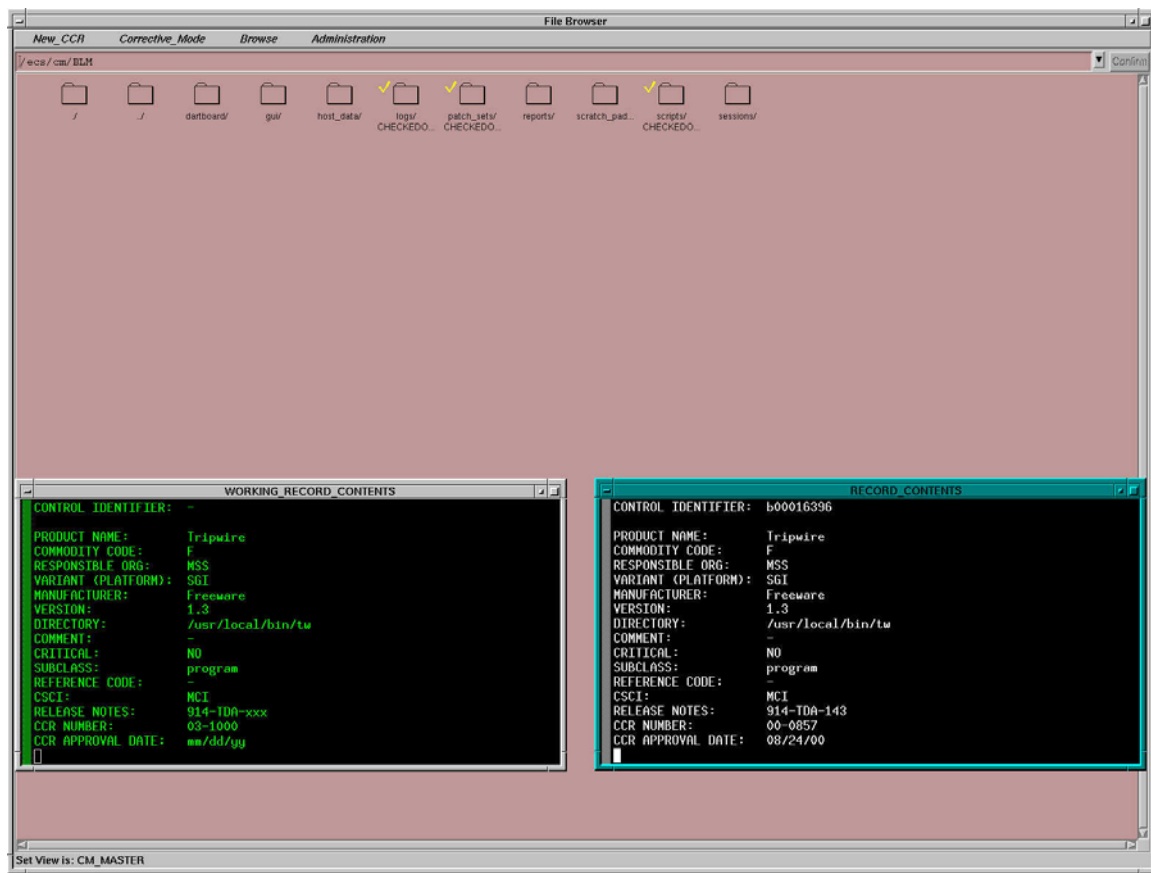*Figure 4.3.3-7. SGI Tripwire COTS S/W Selection*

Figure 4.3.3-8. Working Record Contents Up

Figure 4.3.3-9. All ECS Tripwire SGI Hosts

4.3.3.2.2 ClearCase BLM "CORRECTIVE MODE" GUI Drop Down Menu

Figure 4.3.3-10 shows the ClearCase BLM Tool mode drop down that is used for correcting information that has already been entered for an approved CCR. The basic steps are:

1) Select an existing CCR number
2) Alter the data
3) Either COMMIT the changes, or CANCEL the changes
4) Build the baseline, incorporating the changed data, if COMMITted
5) Promote the baseline, after ensuring that the changes were made as intended

Figure 4.3.3-10. Corrective Mode Drop Down Menu
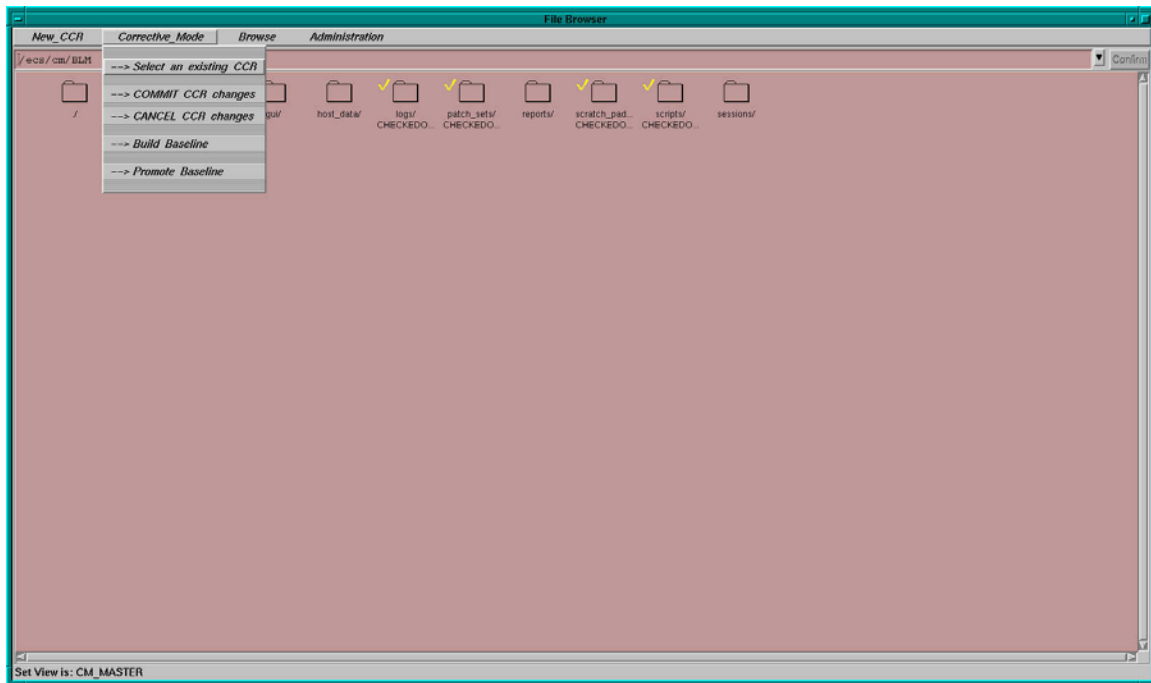
An error will be returned if the CCR does not exist in the ClearCase data structures.

The design intention of this mode was to allow corrections to data that had already been entered. In order to get the ECS baseline data corrected, it was necessary to allow controlled editing of historical files, including the CID_map, any Machines Impacted (MI) files, and any associated Control Item Identifier (CID) records.

Each approved CCR has only one CID_map. This correlates the MI files to the CID. Typically, but not always, there are two variants (host types, like SGI and Sun) of COTS S/W which must be accounted. The CID_map would then have two lines, one MI file for SGI hosts (MI_SGI), and one MI file for Sun hosts (MI_Sun). There would also be two CIDs to account for the SGI and Sun variants. The CID_map would then relate the MI_SGI hosts to the SGI variant CID, and the MI_Sun hosts to the Sun variant CID.

Too often the original MI lists are wrong, that is, the hosts which were directed to get the COTS S/W from the CCR were missing hosts, or listed the wrong hosts. This mode allows for the correction of those files.

The snapshot below in Figure 4.3.3-11 shows the File Browser when CCR "03-0170" has been entered into the text edit window, just before the "save"/"exit":
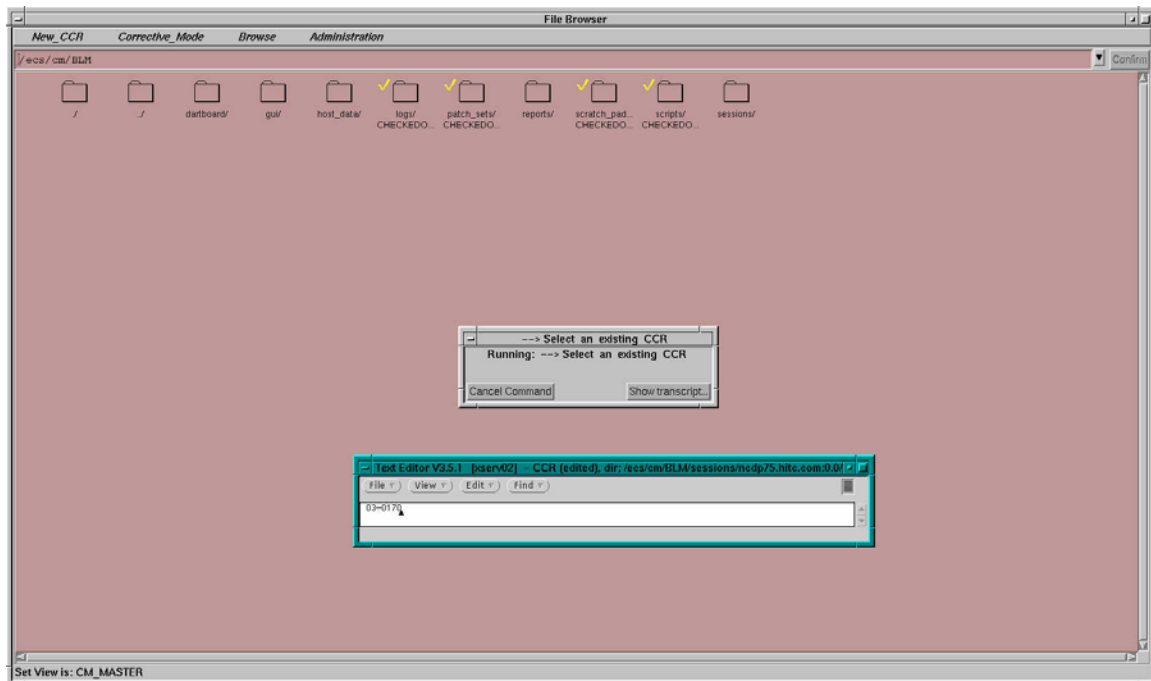
Figure 4.3.3-11. Enter Existing CCR Number Interface

The script will then determine the data structure for the entered CCR. The simplest structure will have one MI file. All CCRs will have the CID_map file. The most complex CCR is an "automount" CCR, where there are 12 different Machines Impacted files, placing 12 COTS S/W products according to the MI files.

CCR # 03-0170 was chosen for its simplicity. It only has one MI file, containing 18 ECS hosts representing EDC, GSFC, LaRC, NSIDC, and the PVC. The MI file is simply named "MI", and it references CID "b00083923."

Figure 4.3.3-12 on the next page shows the launch of three text edit windows. Each CCR will launch the CID_map file for the entered CCR. It is a square window, with one line for each MI/CID pairing.

Because of the nature of the files, the "MI" files are shown in columns, and the CIDs are shown as rows. CIDs are actually just one long line of characters, and the MI files may contain only one host, or over a hundred hosts.
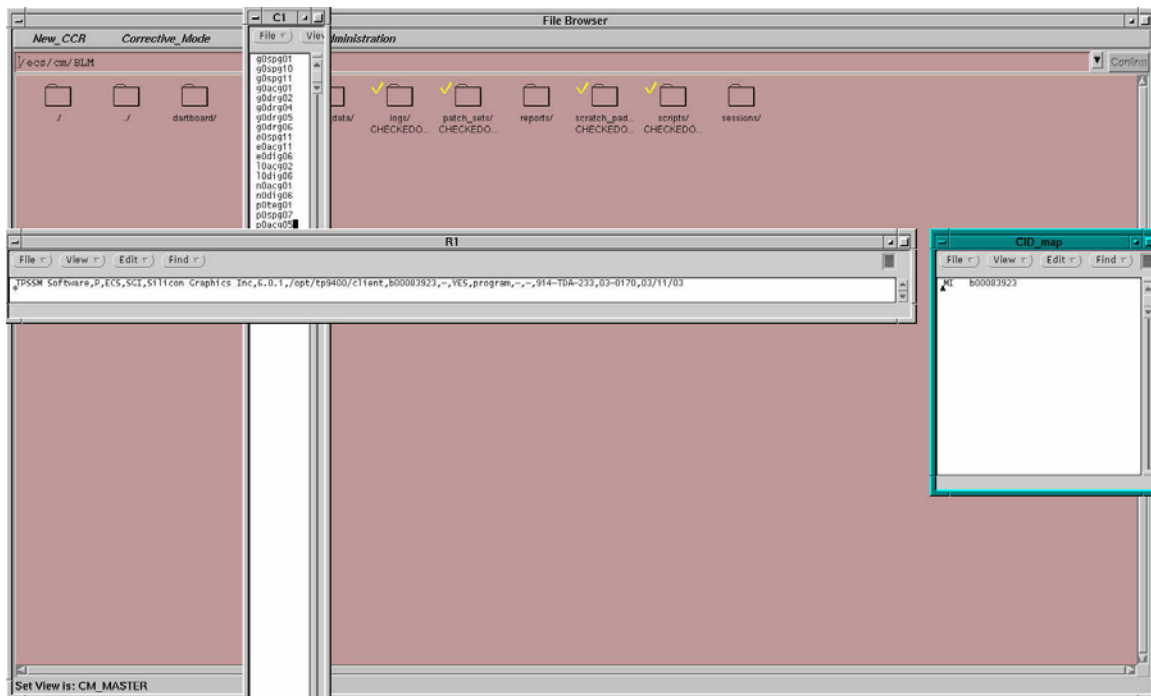
Figure 4.3.3-12.   ClearCase BLM Interface for Modifying a ClearCase CID

The above snapshot shows all three files. Each can be edited. Once the appropriate changes are made, then return to the "Corrective Mode" Main Menu bar item, and select either "COMMIT CCR Changes", or "CANCEL CCR Changes."   The scripts behind the File Browser GUI will perform the necessary ClearCase CheckIns or ClearCase UnCheckouts. Also, each text edit window will close once the appropriate ClearCase commands have been executed. Checksums are performed on all of the text edit files once they were checked out of ClearCase. Once the COMMIT CCR Changes menu item is selected, all of the files are checksummed once again. If any files were edited, the checksums are different. A ClearCase CheckIn command is executed if the file has been changed (file has a different checksum), and a ClearCase UnCheckOut command is entered if the file was not changed. (file has the same checksum).

Select "Build Baseline" from the drop down menu shown by selecting the "Corrective Mode" menu item. This functions exactly like the "New_CCR" "Build_Baseline" item.

Once the /QA_Check files look okay, select the "Promote Baseline" line item.

All changes are recorded within ClearCase history files, and there is also a ClearCase BLM Tool log file kept at /ecs/cm/BLM/logs for the Build sessions. More useful logs are emitted from the scripts are /ecs/cm/BLM/sessions/$DISPLAY/$TIMESTAMP/logs/ClearCase_commands

These logs show each of the ClearCase commands exercised for all of the script executions.

4.3.3.2.3 ClearCase BLM "BROWSE" GUI Drop Down Menu

This particular feature of the ClearCase BLM Tool was added late in the development of the tool. While using the tool, it became apparent that it would be useful to be able to "see" any of the data items tucked away in the tool's repository.
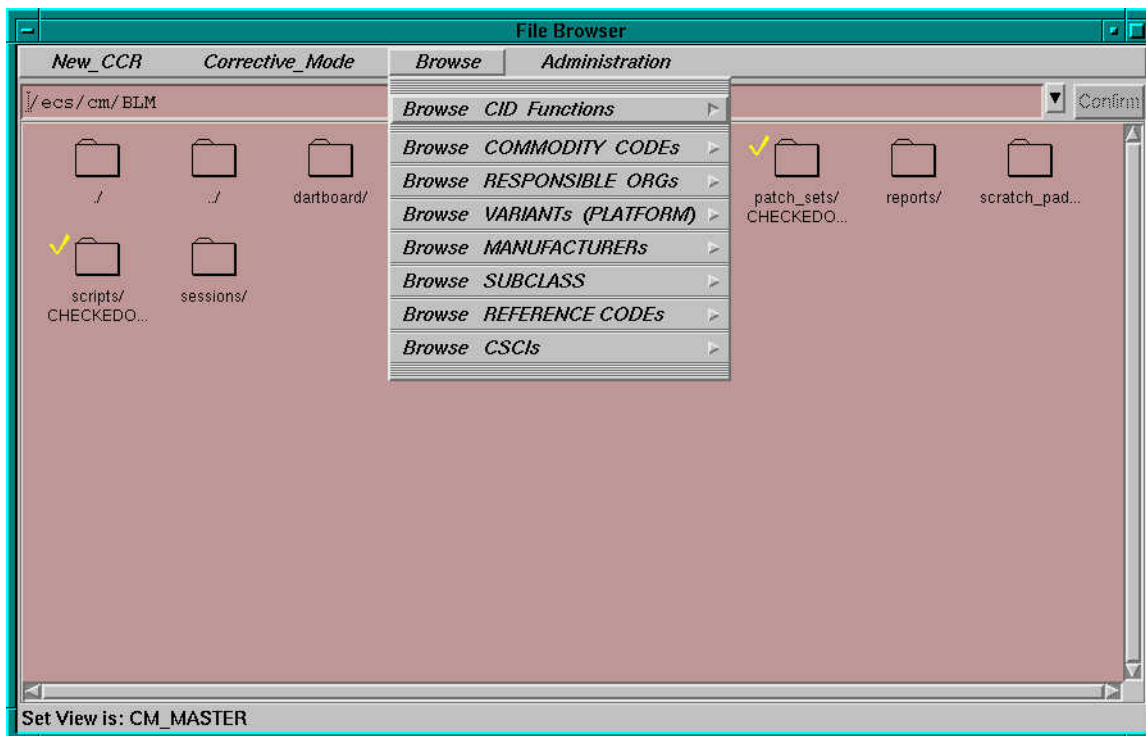
Figure 4.3.3-13. Browse Drop Down Menu

There are 8 different items that can be observed using the "Browse" selection as shown in Figure 4.3.3-13. Each selection has a unique number of attributes that can be viewed. Windows are launched so that the GUI user can "see" the different data.

These drop down menus and data files are generated at the time that the GUI is launched, so it's important to remember that newly added records will not appear in these windows.

In the example below, a ClearCase BLM Tool user wants to know what firmware exists within the ECS baseline.

To determine this, select "Browse" from the File Browser main menu bar, then select "Browse SUBCLASS", then "for SUBCLASS = firmware", as shown in Figure 4.3.3-14.

Alternatively, the user could select "Browse CID Functions", then there would show 7 different types of firmware.

Figure 4.3.3-14. Browse Drop Down with SUBCLASS Selected

Selecting the "for SUBCLASS = firmware" line item will return the following information shown in Figure 4.3.3-15.
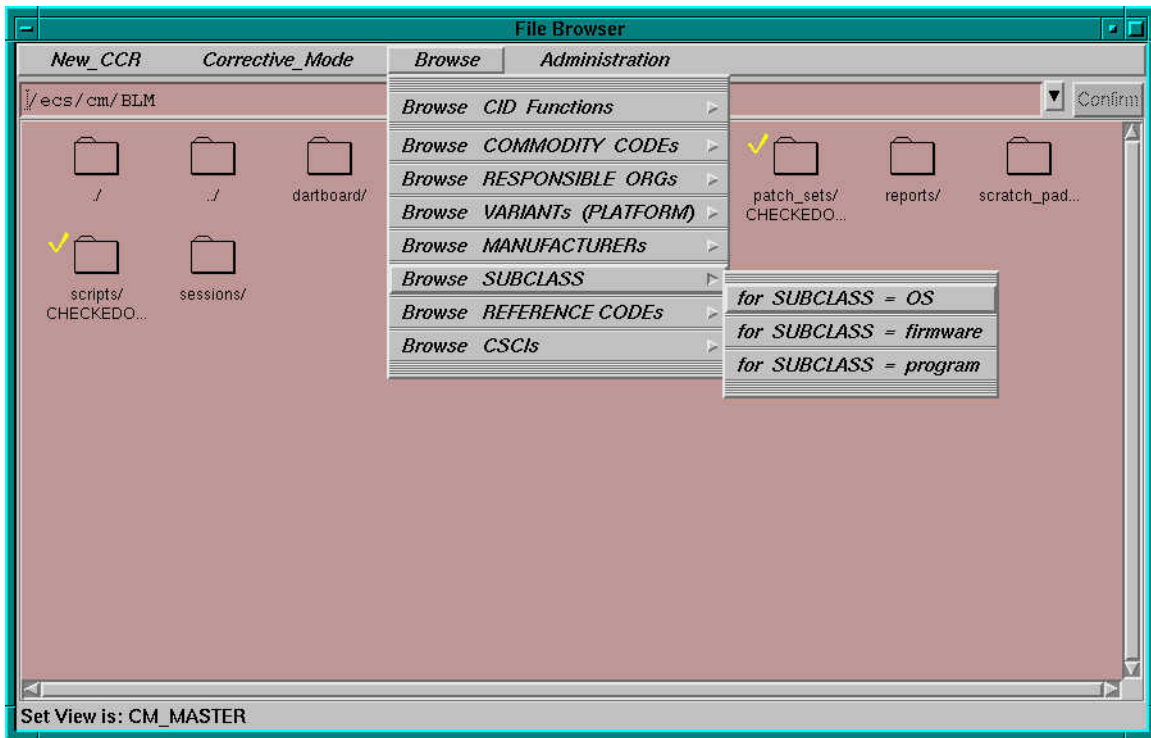
Figure 4.3.3-15. All ECS Firmware Products Selection

Similarly, any of the "Browse" drop down menu items may be selected.

4.3.3.2.4 ClearCase BLM "ADMINISTRATION" GUI Drop Down Menu

The "Modify Users" line item under the "Administration" main menu bar enables a user to add, modify, or remove a UNIX user. The ClearCase file which facilitates this function is /ecs/cm/BLM/scripts/authorized_DISPLAYs. Selecting the "Modify Users" line item initiates a text edit window session using the "authorized_DISPLAYs" file. The format of this file is as follows:

The first three lines of the file are comments that identify the file's location.

The next items are constructs that enable the BLM tool to determine authorized users of the BLM tool, and also authorized terminals. Determination is done at the time the tool is launched.

Each construct must contain at least one line for each perspective BLM tool user. Users may launch the tool from more than one location and terminal, which requires more than one line for the construct. There may be up to five fields within each line. Each field must not have any embedded spaces; spaces (blanks) are used to separate the fields. For readability, user constructs should be separated with blank lines.

The *first* *field* indicates the display nomenclature. For X terminals, this is the string representation of "ncdp10:0.0", for example. This has to be the same string that is known as the DISPLAY environment variable. For PCs, this field needs to be set to the correct IP address associated with the PC. Note that the tool may be used remotely.

The *second* *field* contains the physical location of the terminal. This should be either "home" for off site usage, or the room or cubical number at Landover that contains the terminal.

The *third* *field* is the UNIX user. The UNIX user must be known to the EDF. The UNIX user format usually consists of the first letter of the first name of the user, followed by up to a maximum of 7 letters of the user's last name, all lower case.

The *fourth* *field* indicates whether the terminal is a PC or an X terminal.

The *fifth* *field* contains the IP address resolution of the first field, if the first field is not already an IP address.

TO ADD A USER:

Add a construct to the end of the file with the above fields completed. To determine the first field (DISPLAY) on a PC, run "winipcfg" from the "Start"/"Run" window. It will return the PC's IP address. To determine the first field (DISPLAY) on an X terminal, type "printenv DISPLAY". It will return the value of the DISPLAY environment variable.

NOTE: A newly added user must also be added to the UNIX "ccs" group and UNIX "blm_tool" group. To determine whether a user is currently in the group, type "ypcat –k group | grep ccs" and "ypcat –k group | grep blm_tool". Being a member of the "ccs" group gives one write access to ClearCase BLM records within the ClearCase /ecs/cm VOB. Being a member of the "blm_tool" group allows one to execute the ClearCase BLM scripts which are referenced by the ClearCase BLM GUI.

TO MODIFY A USER:

Simply edit the "authorized_DISPLAYs" file to include the correct information.

TO REMOVE A USER:

Simply delete all of the lines within the "authorized_DISPLAYs" that contains the user's UNIX name.

Note that the tool needs to be re launched in order for any changes in the "authorized_DISPLAYs" file to take effect.

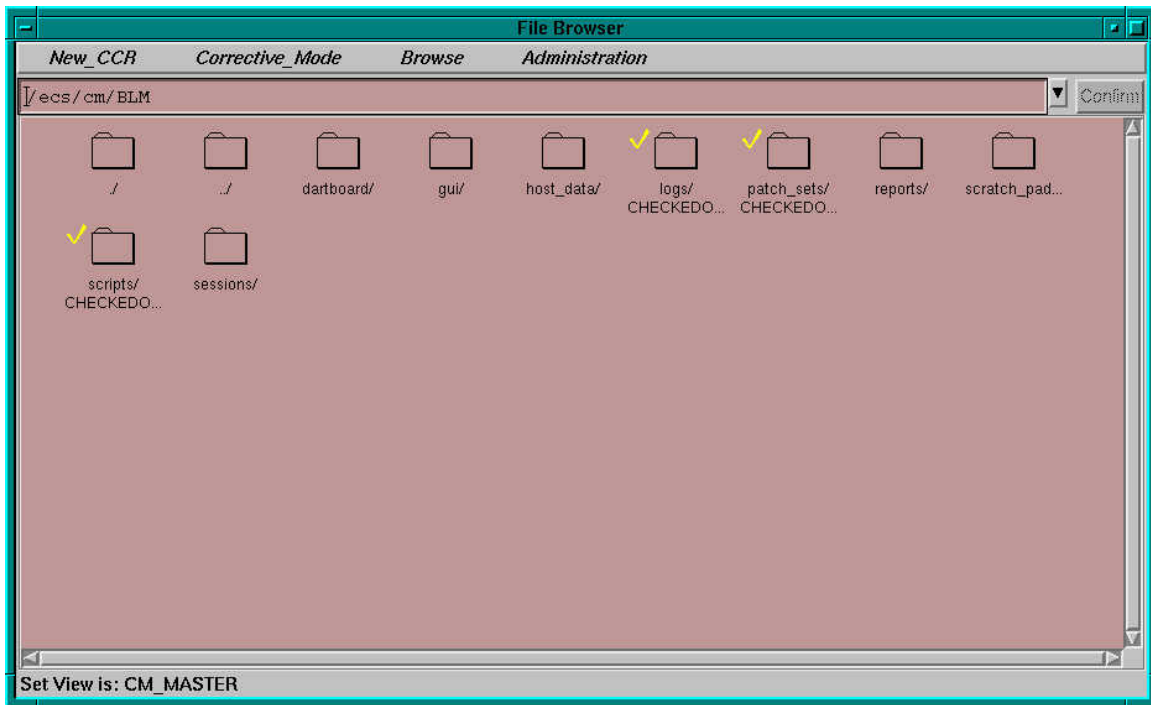The following three snapshots show the screens which were just discussed:

Figure 4.3.3-16. ClearCase BLM Main Menu

Figure 4.3.3-16 shows the ClearCase BLM Main Menu. This section discusses "Administration," which is the fourth item on the Main Menu bar.

To modify a user, select "Modify Users" on the drop down menu, after selecting the "Administration" item on the main menu bar. This is shown in Figure 4.3.3-17 on the next page.
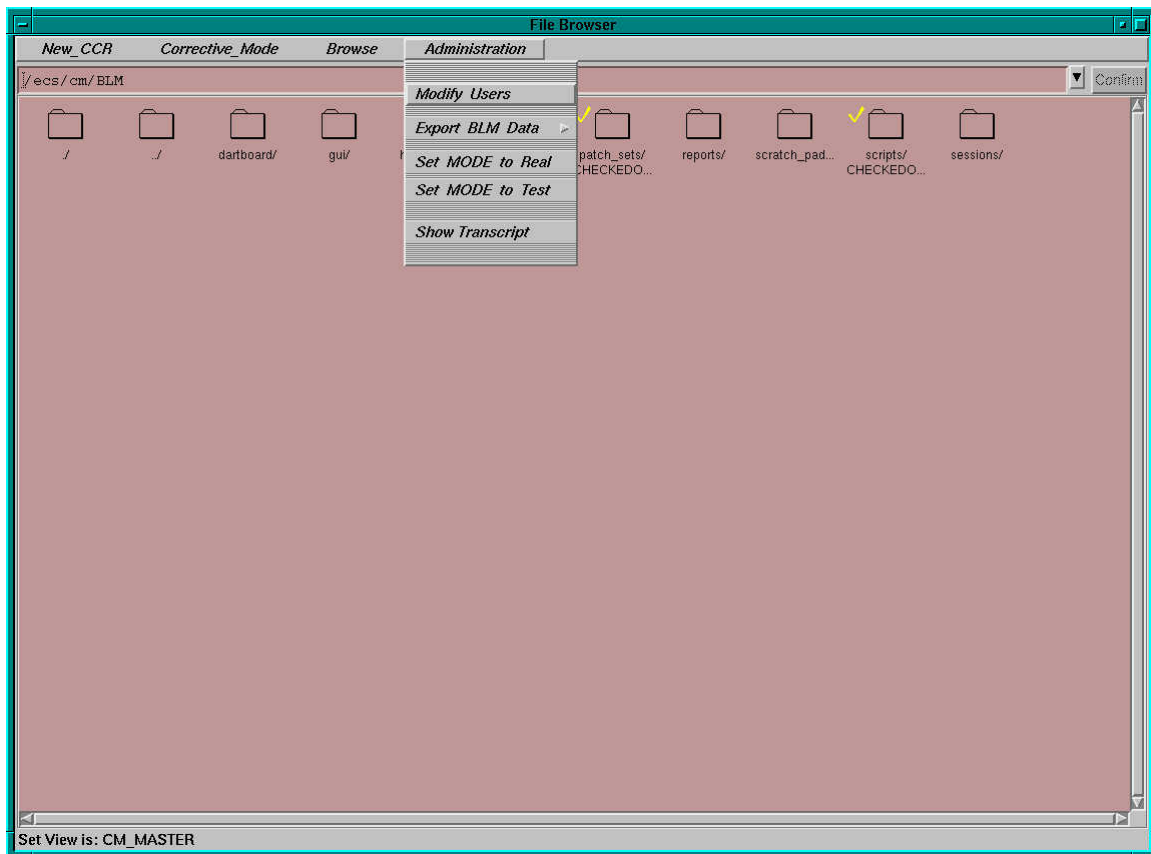
Figure 4.3.3-17. Administration Drop Down Menu

Selection of "Modify Users" will launch an x-term window. The file appears using "textedit" as the text editor. This is shown on the next page.

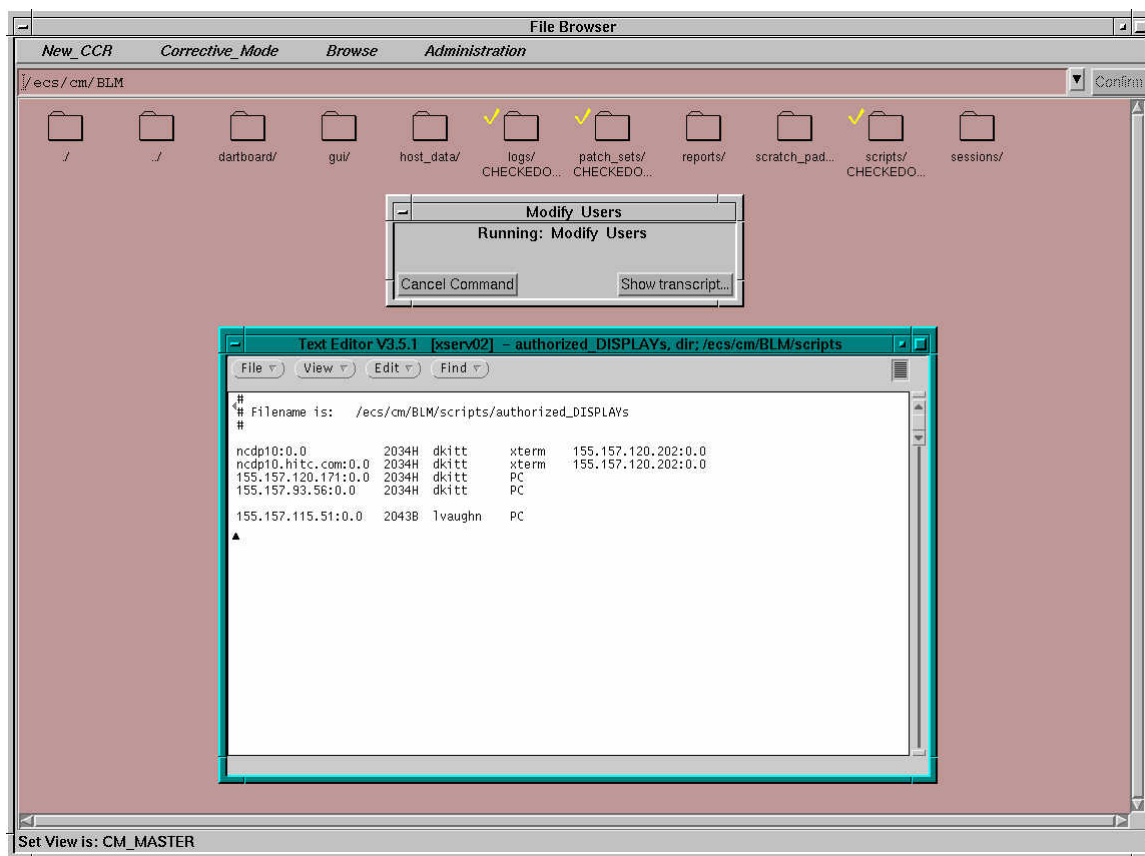The text edit window in Figure 4.3.3-18 shows the file that can be edited.

Figure 4.3.3-18. Administration Modify Users Screen

Follow earlier instructions for changing users or user information.

4.3.3.3 ClearCase BLM Reports

The reports that are generated using the ClearCase BLM tool are listed in Table 4.3.3-1.

Table 4.3.3-1. ClearCase BLM Reports

910-TDA-003	COTS S/W VERSION Baseline Report
910-TDA-005	SITE-HOST Map Report
910-TDA-023	CRITICAL COTS SOFTWARE LIST
910-TDA-030	COTS S/W Where-Used Reports
920-TDx-002	Site Hardware-Software Maps
920-TDx-014	Operating System Patch Maps

These reports are accessible at the URLs:

http://pete.hitc.com/baseline/ (Landover only)

http://m0mss16.ecs.nasa.gov:10160/baseline/ (SMC only)

http://e0ins01u.ecs.nasa.gov:10160/baseline/ (LPDAAC only) (aka EDC)

http://g0ins01u.ecs.nasa.gov:10160/baseline/ (GES DISC only) (aka Goddard)

http://l0ins01u.ecs.nasa.gov:10160/baseline/ (ASDC only) (aka LaRC)

http://n0ins02u.ecs.nasa.gov:10160/baseline/ (NSIDC only)

The 910-TDA-003 report shows all of the COTS S/W that is managed on the ECS program. The software is ordered by the software function, such as "Compilers". Each record entry lists the ECS NAME, the Commodity Code, the Responsible Organization, the Variant, the Manufacturer, the Version, the Principal Directory, the authorizing CCR, and any comments that may be needed for clarification. The report is generated when the "Build Baseline" line item is selected in the **New_CCR** drop down menu.

The 910-TDA-005 report shows all of the ECS hosts that are managed on the ECS program. The format of the file is a matrix, with the columns containing all of a site's hosts, with the rows showing the host names, in addition to Host Functions, Sub systems, and SRC CIs.

The 910-TDA-023 report shows COTS software products' criticality. A critical COTS product is defined as software whose removal from the host would cause the system to not function, with respect to ECS custom code. A critical COTS product is designated by a "YES" in the first column below. A "NO" indicates that the COTS software product is not critical to the performance of the system's functions.

The 910-TDA-030 report allows a user to see all of the COTS S/W, and each host that should have it. A table containing links provides this information. For each COTS product, a link will provide the complete CID record for the product, as well as a matrix showing all of the ECS hosts. Those hosts which should have the product installed have an arrow next to each host name. These Where-Used reports are also used to provide input with new CCRs to affect changes to the baseline. Changes to the CID record, such as a new version, or new hosts, can be recorded and submitted using a mark up of this printout.

The 920-TDx-002 reports show the mapping of the COTS S/W to the managed ECS hosts. There are 8 reports, one for each site. Refer to Table 4.3.3-2.

Table 4.3.3-2. ClearCase BLM Hardware-Software Map Reports

920-TDE-002	LP DAAC (formerly known as EDC)
920-TDG-002	Goddard DAAC
920-TDL-002	Langley DAAC
920-TDN-002	NSIDC DAAC
920-TDS-002	SMC (at Goddard)
920-TDP-002	PVC (at Landover)
920-TDV-002	VATC (at Landover) (The VATC is to be decommissioned)
920-TDF-002	EDF2 (at Landover)

Each site report shows all of the COTS information for each host. The information that is shown for each host includes the host name, any host functions, specific COTS S/W that should be installed, each COTS S/W version and principle directory, the authorizing CCR, associated Release Notes document, and the effective date of the baseline change (CCR approval date).

These reports are subsequently used as a baseline reference for configuration audits.

The 920-TDx-014 reports show the mapping of the Operating System patches to the managed ECS hosts. There are 8 reports, one for each site. Refer to Table 4.3.3-3.

Table 4.3.3-3. ClearCase BLM Operating System Patch Map Reports

920-TDE-014	LP DAAC (formerly known as EDC)
920-TDG-014	GES DISC (formerly known as Goddard DAAC)
920-TDL-014	ASDC (formerly known as LaRC DAAC)
920-TDN-014	NSIDC DAAC
920-TDS-014	SMC (at Goddard)
920-TDP-014	PVC (at Landover)
920-TDV-014	VATC (at Landover) (The VATC is to be decommissioned)
920-TDF-014	EDF2 (at Landover) (consists of the Linux Evolution system)

Each site report shows all of the O/S patches for each host. The information that is shown for each host includes the host name, the O/S patch nomenclature, an O/S patch description, any related 911-TDA-xxx references, the authorizing CCR, associated Release Notes document, and the effective date of the baseline change (CCR approval date). A table at the beginning of each report shows the incorporation dates of the CCRs.

These reports are subsequently used as a baseline reference for configuration audits for Operating System patches.

EMD Baseline maintenance using the ClearCase BLM tools averages 4 hours per month.